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ON THE  
FUNCTIONAL DISEASES  
OF THE  
URINARY AND REPRODUCTIVE ORGANS

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ON THE

# FUNCTIONAL DISEASES

OF THE

## URINARY AND REPRODUCTIVE ORGANS

BY

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## P R E F A C E

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A SECOND edition of my work "On the Functional Diseases of the Renal, Urinary, and Reproductive Organs" being required, I have dissociated, for several reasons, the portion referring to the kidney, reserving it for a special work, and have in the following pages revised and amplified that relating to the latter portion of the subject, adding a chapter on allied female diseases.

What may be termed a metaphysical objection is sometimes taken to the term functional. The time may come when a more exact knowledge of the chemical changes which take place in the living organism may obviate the use of this word, but it has certainly not yet arrived. The sense in which I regard it in conjunction with the term disease, is as indicating simply physiological, in contradistinction to structural or pathological aberrations from the normal state. It is, no doubt, somewhat difficult to draw a clear distinction, but as nearly as possible this position is held in view in the following pages.

In the English language there is no special work in which male sexual derangements are treated in a sufficiently scientific spirit, and consequently on their merits, or without digressing largely into matters which have no conceivable professional relationship. The subject is thus not yet emancipated from the tenacious grasp of the most rampant charlatanism. Strangely enough, corresponding diseases in the female have suffered rather from a *nimia diligentia*. This deficiency I have again endeavoured to supply, and I would fain hope that my present attempt may be found more worthy of the reception accorded to the former edition both at home and abroad.

It consists with my experience, both in public and in private practice, that sexual derangements, real or imaginary, are productive of evils whose magnitude is not sufficiently appreciated; or if so, then the reticence of physicians on these subjects, more especially in this country, must be held as inimical to the best interests of society.

In the presence of that unfortunate confusion—the result of imperfect education—between the moral and the physical, it is extremely difficult to examine or discuss certain questions relating to sexual matters, in such a manner that the conventional and the absolute may not conflict; hence the greater portion of the wretchedness and quackery associated with generative derangements, more particularly in the male.

It appears to me, however, that one thing should be paramount in the mind of the physician, equally with the physiologist, viz., that he should know neither

restraint nor impulse but that of truth, and the consciousness that under this guidance neither science nor human well-being will ever be prejudicially assailed.

As in the former edition, I assume in the present the responsibility of giving expression to what *I* believe to be fact.

To succeed in elevating the literature of the subjects herein treated, from the mire in which it has been permitted too long to remain, would have been a no unworthy triumph—to hasten the accomplishment of this end, ample reward for the trouble which the present undertaking has entailed.

D. C. B.

LONDON.



# CONTENTS.

## CHAPTER I.

### RETENTION OF URINE; ITS VARIETIES, CAUSES, AND TREATMENT.

	PAGE
Physiology of Micturition, . . . . .	1
Structure of the Bladder, and Nervous Supply, . . . . .	2
Nature of the Mucous Coat of the Bladder, . . . . .	4
Budge's experiments on Dogs relatively to Nervous Centre of the Bladder, . . . . .	5
Sokoronin's conclusions relatively to Nervous Centre of the Bladder, . . . . .	6
Special Functions of the Sympathetic, . . . . .	7
Importance of Bernard's physiological experiments, . . . . .	8
Dr Meryon on Secretion, . . . . .	9
Faradisation of the Bladder; effects of, &c., . . . . .	10
Dr Decimus Hogson on the Prostate, . . . . .	10
Sir Charles Bell's views of the <i>Spinctor Vesicæ</i> , . . . . .	11
Kupressow on Vesical Innervation, . . . . .	13
Varieties of Retention of Urine tabulated, . . . . .	14
PHYSIOLOGICAL RETENTION, . . . . .	15
SPASM OF THE BLADDER, . . . . .	15
Symptoms and Treatment, . . . . .	16
RETENTION OF URINE FROM MENTAL EMOTION, . . . . .	17
SPASM OF THE URETHRA, . . . . .	17

### RETENTION FROM VESICAL PARALYSIS.

Normal Function of the Bladder; on what dependent, . . . . .	19
Ischuria; how caused, . . . . .	19
Elucidation of Retention by Nerve Distribution, . . . . .	20
Valentin's experiments on the Sympathetic and Spiral Nerves, . . . . .	21
Pathology of Priapism, . . . . .	23
Vaso-Motor Nerves of the Penis, . . . . .	24
Distinction of the Splanchnic from other Sympathetic Nerves, . . . . .	24
Paralysis of the Abdominal Muscles in its relation to Retention, . . . . .	25
Vesical Paralysis from affections of the Brain and Spinal Cord, . . . . .	25
Treatment of Vesical paralysis, . . . . .	25
Mr Hutchinson's views as to Catheterism, . . . . .	26
Cystitis in cases of Paraplegia, . . . . .	27

	PAGE
Benzoic Acid as a preventive of Ammoniacal Decomposition, . . . . .	28
Tincture of Steel, Strychnine, Ergot of Rye, Phosphorus, and Electricity in treatment of Vesical Paralysis, . . . . .	29
Dr Wernich of Berlin on Ergot of Rye, . . . . .	29
Mode of applying Electricity, . . . . .	30
Dr Althaus on Galvanism, . . . . .	30

## RETENTION FROM OLD AGE.

Anæsthesia and Acnesis contrasted, . . . . .	31
Vesical Debility, . . . . .	31
Retention from Paralysis, how distinguished from Retention from Obstruction, . . . . .	32
Prognosis and Treatment of Retention from old age, . . . . .	33

## RETENTION FROM REFLEX IRRITATION.

Causes of this variety of Retention, . . . . .	34
Case of Retention from Operation for Hæmorrhoids, . . . . .	35
Treatment of Retention from Reflex Irritation, . . . . .	36

## RETENTION OF URINE FROM SHOCK.

Shock ; how acting on the Bladder, . . . . .	36
Diagnosis and Treatment, . . . . .	37

## CHAPTER II.

## IRRITABLE BLADDER AND STRANGURY.

Functional Diseases defined, . . . . .	38
Causes of Irritable Bladder, and Effects, . . . . .	38
Irritable Bladder associated with "Nervous" conditions, . . . . .	39
Relation of the Lithic, and Oxalic Acid Diathesis to Irritable Bladder, . . . . .	39
Treatment of Irritable Bladder, . . . . .	40
STRANGURY—Varieties, . . . . .	40
Mason Good's varieties of Strangury, . . . . .	41
Differentiation of Strangury from Spasm, . . . . .	41
Vermiculous and Polypose Strangury, . . . . .	41
Strangury from Application of Blisters, . . . . .	42
Treatment of Strangury, Percival on, . . . . .	42
Worms in the Bladder, . . . . .	42
Dr Barry of Dublin on Worms in the Bladder, . . . . .	43
Mr Lawrence's case of Worms in the Bladder, . . . . .	43
Symptoms and Treatment of Vesical Worms, . . . . .	45

## CHAPTER III.

ON THE PATHOLOGY AND TREATMENT OF NOCTURNAL ENURESIS,  
AND SPERMATIC INCONTINENCE.

	PAGE
Physiology and Pathological Relations of these conditions, . . . . .	46
Causes of Functional Diseases twofold, Psychical and Somatic, . . . . .	46
Functions of the Sensory, Motor, and Sympathetic Nerves, . . . . .	47
Emotional Stimulation, . . . . .	47
Organic Functions, . . . . .	48
Hysteria, illustrative of Functional Diseases, . . . . .	49
Charcot on preventive treatment of Hysteria, . . . . .	49
Metromania, a Psychical Aberration, . . . . .	50
Effects of Hyperæsthesia on Muscular Fibre, . . . . .	51
Enuresis in Children more frequently due to Somatic disturbance, . . . . .	52
Desault on Involuntary Micturition, . . . . .	52
Enuresis from Debility and Sexual Excesses, . . . . .	53
Spermorrhagia (σπερμα, seed, ἰγγυμι, to break forth), . . . . .	53
Seminal Emission exclusively a Reflex Act ; Micturition different, . . . . .	54
Do the Testicles constantly Secrete Semen ? . . . . .	54
Opinion of Kirkes on the Seminal Fluid, . . . . .	55
Analysis of Vanquelin, . . . . .	55
Physical Constituents of the Seminal Fluid, . . . . .	56
MM. Prevost and Dumas on the relation of the <i>Vasa Defferentia</i> and Ureters in Frogs, . . . . .	56
Views of Hunter, Bransby Cooper, and others, on Seminal Fluid, . . . . .	57
Casper's Cases relating to Seminal Secretion in advanced life, . . . . .	58
Analysis of Dr Davy's Cases, . . . . .	61
Dr Davy's inferences regarding the Functions of the Vesiculæ, . . . . .	62
Hunter on the Fluid in the <i>Vasa Defferentia</i> , . . . . .	63
Inferences, . . . . .	63
First discovery of Spermatozoa, . . . . .	64
Pliny, Savonarola, and Felix Platerus, on the Procreativ Climacteric, . . . . .	65
Can the peculiar Secretion of the Prostate, Cowper's Glands, and the Vesiculæ occur independently of one another, or of the Secretion of the Testicles ? . . . . .	66
Sir Astley Cooper's Case of Castration, . . . . .	66
Gosselin's Experiments on Animals, . . . . .	67
Krahmer's similar Case, . . . . .	67
Godard on Seminal Secretion in cases of Epididymitis, . . . . .	68
Liegéois and Hirtz on Seminal Secretion in Epididymitis, . . . . .	69
John Hunter on Secretion from the Prostate, . . . . .	69
Herodotus on the Seminal Fluid of the Ethiopians, . . . . .	69



	PAGE
Kraus on the Physical Properties of the Seminal Fluid, . . . . .	70
Prout on the Prostatic Secretion, . . . . .	70
Nature of the Fluid discharged from the Urethra at Stool, . . . . .	71
Trousseau's Views, . . . . .	71
Benjamin Phillips on the Fluid discharged at Stool, . . . . .	72
Cullerier on Gonorrhœa, . . . . .	73
Morgagni on Involuntary Seminal Evacuation, . . . . .	73
Is Semen discharged with the Urine in health? . . . . .	73
Clemens on Semen in the Urine, . . . . .	73
Is Semen reabsorbed into the System? . . . . .	74
Lallemand on Spermatic Discharges, . . . . .	74
M. Gosselin on Seminal Reabsorption, . . . . .	75
Haller on Seminal Reabsorption, . . . . .	76
Kolliker on Seminal Reabsorption, . . . . .	77
Dr Hake of Brighton on Seminal Reabsorption, . . . . .	78
Mr Acton on Seminal Reabsorption, . . . . .	78
Hippocrates on Humid Tabes, . . . . .	79
Pickford on Seminal Evacuation, . . . . .	79
Non-Reabsorption of Semen defended, . . . . .	80
Effects of Castration on Animals, . . . . .	81
Budge's experiments on the Cerebellum of a Cat, showing the relations of the Cerebellum and Testicles, . . . . .	81
Roubaud on Priapism, . . . . .	82
Burdach on the relations of Uterine Ulcerations to the Occiput, . . . . .	82
Larry's Case; Atrophy of the Genitals from Injury to the Occiput, . . . . .	82
Lallemand's similar Case, . . . . .	83
M. Chauffard's Case of Satyriasis from injury to the Head, . . . . .	83
Seminal Secretion constant in health, . . . . .	83
Preternatural Excitation stimulates Seminal Secretion, . . . . .	84
Normal Seminal Secretion may lapse into a Pathological State, . . . . .	85
Period of Puberty; its characteristics, . . . . .	86
Feuchtersleben and Cabanis on Characteristics of Puberty, . . . . .	87
Mason Good on Puberty, . . . . .	88
Lucretius on Nocturnal Enuresis and Seminal Incontinence, . . . . .	89
Psychical impressions; their Influence on Organic Functions, . . . . .	90
Physiology of Sleep and Dreams, . . . . .	91
<b>CERTAIN OTHER CIRCUMSTANCES WHICH INFLUENCE THE DEVELOP-</b> <b>MENT OF THE REPRODUCTIVE FACULTY, . . . . .</b>	<b>91</b>
Constitution—Temperament, . . . . .	92
Moral Faculties—Passions, . . . . .	93
Habit, . . . . .	94
Climatic Influences, . . . . .	94
Seasons, . . . . .	95

# CONTENTS.

xiii

	PAGE
EXCESSIVE SEMINAL EMISSION A PATHOLOGICAL STATE, . . . . .	95
Its Manifestations—Constitutional; Local, . . . . .	96
Dr Barclay on the Symptoms Pathognomonic of so-called Sperma- torrhœa, . . . . .	97
Scarpa and Rognetta on Amaurosis from Spermorrhagia, . . . . .	97
Pickford and Trousseau on Seminal Emission, . . . . .	98
Hippocrates on Excessive Venery, . . . . .	99
Dr Bradbury's Case of Locomotor Ataxy, . . . . .	99
IMMEDIATE EFFECTS OF PRETERNATURAL SEXUAL EXCITATION, . . . . .	99
Psychical and Somatic Excitation, . . . . .	100
Mr Solly's case of Spermorrhagia from Spinal Injury, . . . . .	101
Urethritis as a Cause of Seminal Incontinence, . . . . .	102
Chronic Inflammation of the Prostate a cause of Spermorrhagia, . . . . .	103
Coarctation of the Urethra from Prostatic Hyperæsthesia; case, . . . . .	104
Irritation of the Testicle; its Influence on Seminal Secretion, . . . . .	105
Varicocele, an alleged effect of Masturbation, . . . . .	106
Diagnosis of Varicocele, . . . . .	107
Circocoele, . . . . .	107
Anæmia from Sexual Excesses, . . . . .	108
Mauriac on Epididymitis, . . . . .	108
Irritable Testes; Symptoms, . . . . .	108

## SEMINAL INCONTINENCE IN ITS RELATION TO MENTAL STATES.

Alleged Relationship, . . . . .	109
Mental Aberration often due to <i>suggestion</i> , . . . . .	110
Dr Hassall on the Symptoms of Spermatic Incontinence, . . . . .	110
Erotomania in the Male, . . . . .	111
Relation of Mental Affections to Sexual Aberrations, . . . . .	112
Dr Maudsley on Mental Aberration at Puberty, . . . . .	112
Dr Maudsley on Mental Aberration due to Self-Abuse, . . . . .	112
Moral Character of Eunuchs, . . . . .	113
Dr Crichton Browne on Senile Dementia, . . . . .	114
Esquirol on Insanity from Masturbation, . . . . .	115
Dr Ritchie on Insanity from Masturbation, . . . . .	116
Mr Solly on Masturbation as a Cause of Epilepsy, . . . . .	116
Dr Mapother on Quacks, . . . . .	117
Dr Smith on Phthisis from Excessive Seminal Emission, . . . . .	118
Affections of the Heart in Relation to Genital Excesses, . . . . .	119
Dr Sayre's Cases of Reflex Paralysis, 119, 120, 121, 122, 123, 124, 125	125
Analogies of Reflex Paralysis with Epilepsy, . . . . .	125
Dr Mackenzie Bacon on Castration as a Remedy for Epilepsy, . . . . .	126
Clitoridectomy, . . . . .	127
Dubois on Clitoridectomy, . . . . .	127

	PAGE
Græfe of Berlin on Clitoridectomy, . . . . .	128
Richerand on Clitoridectomy, . . . . .	129
CORRELATION OF SYMPTOMS AS ARISING FROM SEXUAL EXCESSES AND	
MASTURBATION, . . . . .	129
Coitus or Masturbation; which most injurious, . . . . .	130
Deslandes on this subject, . . . . .	130
Hunter's opinions criticised by Jesse Foote, . . . . .	131
Trousseau's views, . . . . .	132
VARIETIES AND CAUSES OF SPERMORRHAGIA, . . . . .	132
Preternatural Glandular Excitation, . . . . .	133
Hyperæsthesia of the Prostate and Testicles, . . . . .	134
Varieties of Spermorrhagia, . . . . .	135
Roubaud on "Pollution" and "Spermatorrhœa," . . . . .	135
Dr King Chambers on "Spermatorrhœa," . . . . .	136
Mr Teevan on "True Spermatorrhœa," . . . . .	136
Causes of Spermorrhagia, . . . . .	136
Morbid Conditions of the <i>Vesiculæ Seminales</i> , . . . . .	138
Howship on Morbid Conditions of the <i>Vesiculæ</i> , . . . . .	139
Hydrocele of the <i>Vesiculæ Seminales</i> , . . . . .	140
Affections of the Prepuce as a cause of Seminal Incontinence, . . . . .	141
Affections of the Rectum as a cause of Seminal Incontinence, . . . . .	142
Erichsen on Prolonged Continence, . . . . .	142
Lehmann's case of Seminal Incontinence from Blistering, . . . . .	143
THE ANALOGIES AND RELATIONS OF NOCTURNAL ENURESIS AND	
SEMINAL INCONTINENCE, . . . . .	143
Retrospect, . . . . . 143, 144, 145, 146, 147, 148	148
Diagnosis, . . . . .	148
Prognosis, . . . . .	149
Treatment, . . . . .	150
Meinhinzen's Experiments as to Spinal Reflex Excitation, and	
Influence thereon of Medicinal Agents, . . . . .	151
Agents which diminish Sensibility; their <i>modus operandi</i> , . . . . .	152
Motor Tonics, . . . . .	153
Effects of Iron on the Nervous System, . . . . .	153
Moral Treatment of Enuresis, . . . . .	154
Extension of Gonorrhœal Inflammation to the Bladder, . . . . .	154
Vesical Injections, . . . . .	154
Vesical Absorption, Sir Henry Thompson on, . . . . .	155
Dr Campbell Black's case of, . . . . .	155
MM. Seglas, Demarquay, Russ, and Susini, on Vesical Absorption, . . . . .	158
Dr Braxton Hicks, and Dr Tilt, on Vesical Absorption, . . . . .	159
Employment of Vesical Injections in Diseased States of the	
Organ, . . . . .	160

# CONTENTS.

XV

	PAGE
Goellicke on Incontinence of urine from Hair in the Bladder, .	161
Sir Hans Sloane's Case, . . . . .	161
Mr Powell's Case, . . . . .	161
Treatment, . . . . .	161
Diet suitable in cases of Enuresis, . . . . .	162
Incontinence from Affections of the Spinal Cord, . . . . .	162
Treatment of Spermatic Incontinence, . . . . .	162
First indication to allay Irritability, . . . . .	163
Application of Nitrate of Silver to the Prostate, . . . . .	164
Mr Courtenay's opinions, . . . . .	164
Mr James Douglas on Prostatic Cauterisation, . . . . .	165
Civiale on Prostatic Cauterisation, . . . . .	167
<i>Modus Medendi</i> of Caustic, . . . . .	167
Dr Bradbury on Treatment of Seminal Incontinence, . . . . .	168
Digitalis as an Anaphrodisiac, . . . . .	168
Bromide of Camphor, its Therapeutical Properties, . . . . .	169
Preparations of Lead, their Action, . . . . .	169
Bromide of Potassium, its Effect on the Genital System, . . . . .	170
Phosphorus, Lupulin, &c., . . . . .	170
Steel, Strychnine, and Ergot of Rye, . . . . .	171
Psychical Impressions, how removed, . . . . .	172
Circumcision in Treatment of Spermorrhagia, . . . . .	173
Galvanism in Treatment of Spermorrhagia, . . . . .	175
Sexual Congress, its Influence on Sexual Aberrations discussed, .	176, 177
Cicero, Stewart, and Strauss, on the Appetites, . . . . .	178
PHYSIOLOGICAL RELATIONS OF CONTINENCE AND INCONTINENCE, .	179
Arguments in favour of Sexual Congress, . . . . .	180
Civiale on Continence, . . . . .	181
Sanctorius on Continence, . . . . .	181
Analogy of the Sexual with other Appetites, . . . . .	182
Galen on Continence, . . . . .	183
"Editorial" of <i>The Lancet</i> on Sexual Congress, . . . . .	184
Deslandes on Sexual Congress, . . . . .	186
Seminal Plethora, . . . . .	187
Lallemand on Gymnastic Exercise to diminish Seminal Secretion, .	188
Trousseau's Rectal Pessary as a Cure for Seminal Incontinence, .	189
General Treatment, . . . . .	189

## CHAPTER IV.

### STERILITY IN THE MALE.

Definition of Sterility, . . . . .	191
Procreative Capacity, on what Dependent, . . . . .	191

	PAGE
Malformations of the Male Genital Organs, . . . . .	192
Retained Testes, Cases of, . . . . .	193
Hunter and Follin's Views as to Procreative Capacity of Cryptorchids, . . . . .	195
Cases by Jarjavay, Caspar, and Blandin, . . . . .	197
Procreative Capacity of Monorchids, . . . . .	197
Procreative Capacity of Hypospadias and Epispadias, . . . . .	197
Various Malformations of the Penis, . . . . .	198, 199
STERILITY FROM DISEASED CONDITIONS OF THE REPRODUCTIVE ORGANS, . . . . .	199
Sterility from Epididymitis, . . . . .	200
Prognosis, . . . . .	201
Treatment of Sterility from Epididymitis, . . . . .	202
<i>Sterility from Urethral Stricture,</i> . . . . .	202
<i>Tubercular Affections of the Testicles,</i> . . . . .	203
<i>Influence of Disease on Fecundation,</i> . . . . .	204
Cancer and other Morbid Growths of the Testicles, . . . . .	204
Excessive Venery, its Effects on Seminal Secretion, . . . . .	205
Effects of Hydrocele on the Spermatic Function, . . . . .	206
STERILITY FROM DIMINISHED REFLEX PARESIS, . . . . .	206
"Entonic Impotency," . . . . .	207
EPILEPTIC MISEMISSION, . . . . .	208
IDIOPATHIC AZOOSPERMIA, . . . . .	209
RELATIVE STERILITY, . . . . .	210

## CHAPTER V.

## MALE IMPOTENCY.

Definition of Impotency, . . . . .	212
Physiology of Erection, . . . . .	213
Psychical Causes of Impotency, . . . . .	214
Objective Causes of Impotency, . . . . .	215
Montaigne's Method of Cure, . . . . .	216
Subjective Causes of Impotency, . . . . .	217
Treatment, . . . . .	218
Physical Causes of Impotency, . . . . .	218
Cases of Fœdéré, Schenck, Cattier, Nelaton, &c., . . . . .	219
Abnormal Development of the Penis, . . . . .	220
Bifurcation of the Penis, . . . . .	221
VICIOUS DIRECTIONS OF THE PENIS, . . . . .	221
Petit on their Pathology, . . . . .	221, 222
Malformations of the Prepuce, . . . . .	223
Malformations of the Bladder, . . . . .	224, 225

# CONTENTS.

xvii

	PAGE
<i>Idiopathic Impotency from Defect of Energy,</i> . . . . .	226
Satyriasis, . . . . .	227
Priapism, . . . . .	227
SYMPTOMATIC IMPOTENCY, . . . . .	228
From Pathological States, . . . . .	228
From Obesity, . . . . .	228
Treatment, . . . . .	229
From Marasmus, . . . . .	229
From Tabes Dorsalis, . . . . .	229
From Obstinate Spermatic Discharges, . . . . .	229
From Chlorosis, . . . . .	229
Roubaud's Case, . . . . .	230
<i>Impotency from Diabetes,</i> . . . . .	231, 232
IMPOTENCY FROM AFFECTIONS OF THE PROSTATE, NECK OF THE	
BLADDER, AND VASA DEFERENTIA, . . . . .	233
Anticipating Misemission, . . . . .	233, 234
Impotency from Affections of the Nervous System, . . . . .	235
Treatment, . . . . .	236
Impotency from Diseased Conditions of the Nerves, . . . . .	237
Impotency from Organic Neuroses, . . . . .	237
IMPOTENCY FROM TOXEMIA, . . . . .	237
Impotency from Lead Poisoning, . . . . .	237
Seat and Symptoms, . . . . .	238
IMPOTENCY FROM ANTIMONIAL AND ARSENICAL POISONING, . . . . .	239
Symptoms, . . . . .	239
IMPOTENCY FROM THE TOXIC EFFECTS OF IODINE AND BROMINE, . . . . .	240
<i>Epitome of the Treatment of Impotency,</i> . . . . .	240
MALE PRECOCITY, . . . . .	241
Cases of, . . . . .	241, 242
Treatment, . . . . .	242

## CHAPTER VI.

### ANOMALOUS URETHRAL DISCHARGES.

Definition of Anomalous Urethral Discharges, . . . . .	244
Diagnosis of Leucorrhœa and Gonorrhœa, . . . . .	245
Professor Kuss on Leucorrhœa and Gonorrhœa, . . . . .	246
Causes of Urethritis, . . . . .	246
Case of Simple Urethritis, . . . . .	247
Fluid Discharged at Stool, . . . . .	248
Symptoms of Prostatitis, . . . . .	249, 250
ACUTE EPIDIDYMITIS, as a cause of Urethral Discharge, . . . . .	251

	PAGE
CONSTITUTIONAL CAUSES OF SIMPLE URETHRITIS, . . . . .	252
Skin Diseases, . . . . .	252
Carbuncular Diathesis, . . . . .	252
Long-sustained Intellectual application as a cause of Urethral Discharges, . . . . .	253
Diseases of the Rectum as causes of Phallorrhœa, . . . . .	253
Hæmorrhoids as a cause of Phallorrhœa, . . . . .	253
Alcoholic Drinks, &c., causes of Phallorrhœa, . . . . .	253
Cantharides as a cause of Phallorrhœa, . . . . .	254

## CHAPTER VII.

## IMPOTENCY AND STERILITY IN THE FEMALE.

Limits of Procreative Capacity in the Female, . . . . .	255
Impotency, Infecundity, Sterility, . . . . .	255
IMPOTENCY, OR INAPTITUDE FOR COPULATION, . . . . .	256
From Congenital, Accidental, and Pathological Conditions, . . . . .	256
Varieties, . . . . .	256, 257
Amussat's Case of Absence of the Vagina, . . . . .	258
STRICTURE OF THE VAGINA, . . . . .	259
<i>Congenital Atresia of the Vagina</i> , . . . . .	260
Pathological Conditions of the Uterus, Vagina, &c., as causes of Impotency, . . . . .	261
Vaginismus, . . . . .	261
Neuralgia of the Vagina, . . . . .	262
INFECUNDITY, OR INAPTITUDE FOR IMPREGNATION, . . . . .	263
Cases, . . . . .	263
Imperforation of the Uterine Canal, &c., . . . . .	264
Hypertrophy of the Uterine Neck, and Tumours, . . . . .	265
Treatment, . . . . .	265
Stricture of the Cervical Canal, . . . . .	266
Obstruction from False Membranes, . . . . .	266
Treatment, . . . . .	266
Other Varieties of Uterine Stricture, . . . . .	267
Spasm of the Uterus, . . . . .	267
Position of the Uterus in Pelvic Cavity, . . . . .	268
Vital Displacements, . . . . .	269
UTERINE DISPLACEMENTS INDEPENDENT OF COITUS, . . . . .	269
<i>Exaggerated Elevation of the Uterus</i> , . . . . .	269
<i>Prolapsus of the Uterus</i> , . . . . .	270
<i>Versions of the Uterus</i> , . . . . .	270
Degrees of Uterine Displacement, . . . . .	271

# CONTENTS.

xix

	PAGE
Indications of Treatment, . . . . .	272
Pessaries and other Remedial Agencies, . . . . .	273
<i>Uterine Flexions</i> , . . . . .	274
<i>Inversion of the Uterus</i> , . . . . .	274
Treatment of Uterine Inversion, . . . . .	275, 276
Uterine Polypi, . . . . .	277
Fibrous Tumours, . . . . .	277
Congestion of the Uterus, . . . . .	277
Metritis, . . . . .	278
False Membranes, . . . . .	278
Morbid Secretions, . . . . .	278
Indications of Treatment of this Form of Infecundity, . . . . .	279
Idiopathic Uterine Hæmorrhages, . . . . .	279
Treatment, . . . . .	280
Passive Uterine Hæmorrhage, . . . . .	280
Treatment, . . . . .	281
ABNORMALITIES OF OVULATION (Sterility proper), . . . . .	282
Congenital Absence of the Ovaries, . . . . .	283
General Symptoms, . . . . .	283
VITAL LESIONS OF THE OVARY AS A CAUSE OF STERILITY, . . . . .	284
<i>Evolution of Normal Ovarian Function</i> , . . . . .	285
<i>Malposition of the Ovary</i> , . . . . .	286
Simple or Complicated, . . . . .	287
Hernia of the Ovary, . . . . .	288
Percival Pott's Case, . . . . .	288
GENERAL CAUSES OF FEMALE STERILITY, . . . . .	289
Temperament, Hereditariness, &c. &c., . . . . .	290
Premature Abortion due to Venereal Excesses, . . . . .	291
RELATIONSHIP OF MENSTRUATION WITH STERILITY, . . . . .	292
Pouchet's Conclusions, . . . . .	293
Courty's Conclusions, . . . . .	294
Venereal Excesses as a cause of Sterility, . . . . .	294
Peculiar Affections of the Genitals due to Excessive Coitus, . . . . .	295
Affections of the Mucous Membrane from, . . . . .	296
INFLUENCE OF FRIGIDITY ON FECUNDATION, . . . . .	297
Roubaud's Varieties of Frigidity, . . . . .	297
Parent—Duchâtelet on, . . . . .	298
Malformations of the Clitoris as perverting the Genital Sense, . . . . .	299
ARTIFICIAL IMPREGNATION, . . . . .	300



“ Γνώση δὲ τὰδ’ ὥς ἔτυμ’, οὐδὲ μάτην  
χαριτογλωσσέειν ἐνί μοι.”

“ We live in a world which is full of misery and ignorance, and the plain duty of each and all of us, is to try and make the little corner he can influence somewhat less miserable, and somewhat less ignorant, than it was before he entered it.”—*Huxley*.

“ Licet omnibus, licet etiam mihi, dignitatem Artis medicinæ tueri; potestas modo veniendi in publicum sit, dicendi periculum non recuso.”—*Cicero*.

“ Loué par ceux-ci, blâmé par ceux-la, me moquant des sots, bravant les méchants, je me hate de rire de tout . . . de peur d’être obligé d’empleurer.”  
—*Beaumarchais*.

“ La sincerité scientifique ne connaît pas les mensonges prudents. Il n’est pas en ce monde un motif assez fort pour qu’un savant se contraigne dans l’expression de ce qu’il croit la vérité.”—*Renan*.

“ Wenn deine schrift dem kenner nicht gefällt,  
So ist es schon ein böses zeichen :  
Doch wenn sie gar des narren lob erhält,  
So ist es zeit, sie ausgustreichen.”

—*Gellert*.

ON THE  
FUNCTIONAL DISEASES  
OF THE  
URINARY AND REPRODUCTIVE ORGANS.

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CHAPTER I.

RETENTION OF URINE : ITS VARIETIES, CAUSES, AND  
TREATMENT.

SYNONYMS.—Retentio Urinæ (*Lat.*); Rétention d'Urine (*French*);  
Harnverhaltung (*Ger.*); Retenzione d'Orina (*Ital.*).

0 CONTENTS:—Physiology of Micturition—Structure of the Bladder—  
Relations of Spinal Cord to Vesical Ennervation—Varieties of  
Urinary Retention—Physiological Retention—Spasm of the  
Bladder—Spasm of the Urethra—Retention from Vesical Paralysis  
—Pathology of Priapism—Retention from Old Age—Retention  
from Reflex Irritation—Retention of Urine from Shock.

STRICTLY speaking, the urinary canal may be said to extend from the pelvis of the kidney to the *meatus urinarius* of the penis; the bladder being simply a reservoir conveniently situated, and admirably adapted, from the perfection of its mechanism, to meet the varied exigencies of our state.

The passage of urine from the kidney to the bladder is a purely involuntary act; its expulsion from the bladder is a reflex act, which may be performed independently of the will, but over which volition has to a considerable degree a regulating and controlling

influence. Between the purely organic or involuntary and the purely voluntary actions of the body, that of micturition consequently occupies a middle position. These facts, therefore, imply the existence of a muscular mechanism, partly independent and partly dependent on the cerebro-spinal system. Hence, in common with the other portions of the ureter, the pelvis of the kidney and the greater portion of the calyces consist of three coats,—externally, a strong fibro-areolar one, which becomes continuous at the bases of the papillæ with the portion of the proper coat of the kidney, which is continued inwards to the sinus; intermediately a strong muscular coat, consisting, as in all canals of the body having like functions to perform, of longitudinal and circular fibres; and internally, a thin mucous coat, which is reflected over the summit of each papilla. The special function of the ureter being beyond the control of the will, its nerves are derived exclusively from the inferior mesenteric, spermatic, and hypogastric plexuses of the sympathetic. The bladder, in like manner, is composed of three coats,—outermost, a serous, partial in extent, and derived from the peritoneum; intermediately, a muscular; and innermost, a mucous coat. The muscular coat of the bladder, which more immediately regulates the expulsion and retention of urine, is composed of pale involuntary muscular fibres, in the anatomical sense of the description. These fibres are so arranged as to form three layers; the external fibres taking a longitudinal course, the intermediate being circularly arranged, and the third, or innermost, following the same course as the superficial layer. The longitudinal fibres are most apparent on the *anterior*

and *posterior* aspects of the bladder. In front their commencement is traced to the surface of the prostate gland in the male, and to a corresponding region of the vagina in the female ; and from this they pass, on the one hand, over the anterior surface of the bladder towards its summit, and posteriorly, in like manner, towards the base of the viscus, on the lateral aspects of which they run obliquely, and not unfrequently intersect one another. From the part which these muscular fibres perform in the act of micturition, they are collectively termed the *detrusor urinæ* muscle. In the upper and back portion of the bladder the middle or *circular* coat does not follow the regularity of the arrangement which the term implies, for in this portion of the bladder the arrangement of this part of the muscular coat is rather oblique than circular ; but as the vesical orifice is approximated, the layers become more dense and more circular in disposition, and around the neck of the bladder constitute dense muscular fibres, termed the *sphincter vesicæ*, which, however, is not anatomically distinct from the common middle coat. The difference in the disposition of the fibres of the middle coat, in the regions mentioned, is an interesting anatomical fact, and has, no doubt, a physiological significance, to which reference will be made in the sequel.

The most deeply situated or sub-mucous coat, very delicate in structure, is disposed in a longitudinal manner throughout the surface of the bladder, and, doubtless, co-operates with the external coat in the performance of a common function.

Between the mucous membrane of the bladder and the muscular coat, a layer of areolar tissue, termed the

*cellular* or *vascular* coat, exists. The mucous coat is smooth, soft, and of a pale rose colour. In the undistended condition of the bladder it is arranged in folds, but becomes smooth or even in surface according to the degree of distension. At the orifice of the urethra it forms a small projection termed the *uvula vesicæ*. In a hypertrophied condition of the muscular coat of the bladder, in particular, two muscular bands may be seen converging from the orifices of the ureters towards the urethral orifice. At their point of convergence they cross each other, forming the deeper portion of the *uvula vesicæ*, and then become continuous with the longitudinal muscular fibres of the urethra. It is their office to occlude the orifices of the ureters, and to open that of the urethra; and they are termed the muscles of the ureters. *En passant*, it may be remarked that paralysis of these fibres, no doubt, contributes to several states of retention of urine.

The mucous coat of the bladder is covered with a stratified epithelium, in variety intermediate between the columnar and squamous. The vesical mucus is alkaline, and is said to contain alkaline and earthy phosphates.

Partaking of an intermediate nature between voluntary and involuntary muscular fibre, the nerves of the bladder are derived, consequently, both from the sympathetic and cerebro-spinal system,—the former from the hypogastric plexus, and the latter from the sacral plexus. It is interesting and instructive, in a pathological point of view, to notice that the sympathetic is distributed to the upper part of the bladder, and the spinal nerves more particularly to the neck and base. Through the visceral branch of the fourth sacral

nerve, a connection between the cerebro-spinal nerves of the bladder and prostate is established with the sympathetic, by the junction of the former with the hypogastric plexus; and by means of the muscular branch of the same nerve, distributed to the levator ani and coccygeus, intimate pathological connections between the bladder, the rectum, and adjacent textures are well known to exist.

With reference to the nervous distribution of the bladder, Budge, of Griefswald,\* has recently performed some very interesting experiments on dogs, from which the following conclusions have been drawn:—The tracing of the vesical nerves from their origin to their peripheræ being, at present impracticable, Budge resorted to faradisation of the nervous centres, to determine the relative interdependence between the bladder and the brain, and spinal cord. By faradising the central hemispheres, the corpora striata and the thalami optici, no effect was produced upon the bladder; but no sooner were the electrodes made to touch the pedunculus cerebri and the restiforme body than the bladder contracted, and urine was voided. It was thus made manifest that this portion of the cerebro-spinal centre furnishes its motor power to the bladder. In order further to determine the medium of communication, the sympathetic and pneumogastric were divided, but without producing any modification of the manifestations previously observed; but *after section* of the cord, faradisation had no effect. It was further demonstrated that the vesical motor fibres proceeded from the pedunculus and restiforme body, through the

\* Zeitschr. f. rat. Heilk. xxi. pp. 3 and 174. Ueber die Reizbarkeit der vorderen Rückenmarksstränge (Pflügers Archiv. für Physiol., Bd. ii. p. 51).

anterior columns of the cord, to the anterior roots of the third and fourth sacral nerves, and that their function may be excited through the cerebrum, and by means of reflex action conveyed through the posterior roots of the sacral nerves. Further, it is alleged that there is another nervous centre for the bladder in the lower part of the lumbar region, from which, through the hypogastric plexus, motor fibres are sent to the bladder; and we are assured that excitability persists in this region longer, after death, than in any other portion of the nervous system exercising any control over the bladder. The centripetal nerves of this region are the sensory nerves which run in the posterior roots of the third, fourth, and fifth sacral nerves.

More recently, N. Sokoronin\* arrived at the following conclusions, confirmatory of Budge's views. He agrees with AfonasiEFF that the contractions of the bladder observed after irritation of the *pedunculi cerebri* are essentially due to irritation of the vaso-motor system, for the application of a ligature to the aorta prevented the contractions. He believes that there is a motor centre for the bladder in the brain, the motor fibres from which enter the spinal cord and emerge with the first, second, and third roots of the sacral nerves, to pass into the hypogastric plexus. Reflex contractions of the bladder can be made to take place by excitation of such nerves as the sciatic and crural, and the sensory nerves of the body generally, as well as the splanchnics, but not by the pneumogastric, and by excitation of the proper sensory nerves of the bladder itself. These, as already remarked, are partly continued in the sacral nerves, and partly in connecting branches between the

\* Pflüger's Archiv. (Band. viii. Heft. xii.).

hypogastric plexus, and the inferior mesenteric plexus. Pain must be felt by the animal in the former case before the reflex actions occur, since they do not take place if the hemispheres have been previously removed, or if the spinal cord be divided in the cervical region. But in the second case, the proper sensory nerves of the bladder, which run in the sacral nerves, have as their centre some point in the vicinity of the fourth lumbar vertebra, and those movements which are excited through the sensory sympathetic fibres have as their centre the superior mesenteric ganglion.

To what extent do the results of these experiments accord with what is known of the relative functions of the sympathetic, sensory, and motor portions of the nervous system? As this subject bears equally upon the phenomena of retention, and upon other questions to be discussed in subsequent sections of our undertaking, a review of them here may obviate unnecessary recapitulation.

An examination of the sympathetic ganglia discloses a connection with motor and sensory nerves. With the spinal cord each ganglion is connected by means of (*a*) white nerve fibres proceeding from the spinal cord to the ganglia, and (*b*) grey nuclear fibres (fibres of Remak) proceeding from the ganglion to the cord; and it may be incidentally remarked that the opinion is generally entertained by physiologists that every ganglion possesses in itself the properties of a nervous centre, being capable of originating, transmitting, and regulating impressions on the structures to which its branches are distributed.\*

\* *Vide* Dr Andrew Buchanan's pamphlet "On the Classification of the Functions of the Human Body."



In the hypogastric plexus these communications abound, the lumbar ganglia having each two communicating branches from the spinal nerves. At the lower end the hypogastric plexus divides into two parts, one on each side of the pelvic viscera (pelvic plexuses), from which numerous branches are sent to the rectum, bladder, vas deferens, vesiculæ seminales, prostate, and cavernous portion of the penis, in the male; and the ovary, vagina, and uterus in the female.

Seeing that so little exists, without manifest design, in the very perfect mechanism of the human body, the fact of this intimate connection of the sympathetic with the cerebro-spinal system has naturally led physiologists to infer that peculiar properties were developed by this interchange of nerve fibres, and to Claude Bernard, to whom scientific medicine and physiology owe so much, is due the credit of advancing our knowledge on this abstruse question, as well as on so many kindred subjects. It has been long known that the nervous supply of the vascular system is derived from the sympathetic, and we are familiar with the effect produced by the withdrawal of the influence of this portion of the nervous system from minute blood vessels. In addition to such experiments of Bernard's as we have already adverted to, he found that division of the sympathetic in the upper part of the dorsal region in the horse was followed, as in the experiment on the rabbit, by greatly increased vascularity, and that the corresponding surface was bathed in perspiration.

By far the most important experiment, however, with which we are acquainted, as elucidating the respective properties of the three portions of the nervous system, is the following one, likewise performed first by

Bernard,\* and which Dr Meryon informs me he has also performed with similar results. Bernard exposed in a dog the gustatory nerve, the chordæ tympani (before they receive communicating branches from the lingual nerve), and the submaxillary ganglion. By this means a motor nerve (the chorda tympani), a sensory nerve (the lingual), and a ganglionic centre were exposed to view. Thereupon he divided the gustatory nerve before its junction with the tympanic nerve, and immediately the secretion from the gland was arrested, because, as Dr Meryon believes, the vital sense of the gland was destroyed. He then pricked the centripetal end of the divided nerve, and a large quantity of saliva was secreted, while the ducts of the parotid and sublingual remained dry. The experiment was subsequently varied by section of the common nerve, the insertion of a tube into the Whartonian duct, and by a weak current being communicated to the peripheric end of the divided nerve. Whenever this was done, a drop of saliva was seen to fall from the tube. Thus secretion was arrested by division of the gustatory, and reproduced by pinching its centripetal end. It was arrested by division of the compound nerve, but likewise restored by the stimulus of electricity applied to the centrifugal end—when applied to the centripetal end of the divided nerve no effect was produced. As the sensory nerve is centripetal in function, it could not affect secretion except by reflex action through the motor; it is obvious, therefore, that it is upon the motor nerve that the supply of blood for increased secretion depends.†

\* Comptes Rendus, vol. xxxiv. p. 474.

† *Vide* Dr Meryon's excellent lectures in the "Lancet," vol. ii. 1871.

I have always entertained the belief that the function of an organ is maintained in its normal state by a certain potential equilibrium or correlation of the various nerves by which it is supplied. Thus impressions upon the sympathetic (fibres of Remak), which correspondingly diminish its inhibitory power, exalt motor influence, by accelerating the circulation; of which examples are furnished in the increased force and frequency of the heart's action,\* caused by mental impressions, and augmented glandular secretion, likewise occasioned by mental impressions, if not originating in, being at least directed towards particular parts of the ganglionic system. This disturbance of the nutritive balance is the psychical; while Bernard's experiments, just referred to, demonstrate how sematic influences (reflex irritation, etc.) upon the sensory nerves may be productive of like results.

Reverting, after this apparent digression to Budge's experiments, we are solicited to disbelieve—not for the first time, however—in the existence of a special *sphincter vesicæ*,† on the following grounds. ‡ “Faradisation

\* It is demonstrable in the frog and other animals, that by communicating electric shocks to the pneumogastric nerve the action of the heart is arrested. After a little time the influence passes off, and the heart resumes its action.

† For the information of recent writers, who seem to think that Budge's views regarding the circular fibres in the neck of the bladder are novel, it may be mentioned that some years ago, Dr Decimus Hodgson, of Glasgow, published a small volume, “On the Prostate Gland, and its Enlargement in Old Age,” in which the following passage occurs. In treating of “Healthy Micturition,” Dr Hodgson remarks “that the prostatic urethra and the neck of the bladder, with the neck of the canal, are kept closed during the intervals of micturition by means of the elastic tissue of their walls, quite in the same manner as the bladder is kept in apposition with its contained urine; and the muscular fibres of the bladder and urethra are simply employed in expelling the urine at intervals.”

‡ Dr Althan's Brit. Med. Jour. 1875.

of any portion of the bladder caused urine to be voided; and when Budge caused a column of water to flow in an uninterrupted stream out of the bladder, faradisation of the anatomical sphincter had no influence in arresting the flow. This was, however, immediately checked when the electrodes were directed to the membranous portion of the urethra acting upon the *constrictor urethræ* and *bulbo-cavernosus muscles*," which, it is contended, performed the part of sphincter to the bladder. Now, it must be urged, that this experiment is insufficient to overthrow the opinions first enunciated, we believe, by Sir Charles Bell, and accepted by so many competent observers after him. It is, indeed, at variance with experience, and opposed to what we believe to be the normal physiological functions of adjacent organs. In the first place, this experiment simply demonstrates, looking at the question from an anatomical point of view, what would, *prima facie*, be expected from their size, that the constrictor urethræ and bulbo-cavernosus muscles are endowed with more potent muscular contractibility, on the one hand, than the *detrusor urinæ* muscle, and, on the other, than the comparatively slender portion of the middle coat which constitutes the anatomical sphincter. This view (that of Budge) is further negatived by the facts, that in operations which involve the cutting of these muscles, incontinence of urine does not necessarily follow, that neither the bulbo-cavernosus nor the constrictor urethræ passes sufficiently far back to prevent the presence of urine in the prostatic portion of the urethra—an occurrence, it need hardly be remarked, at variance with the most moderate experience of the use of the catheter. Moreover, it is the special action of these muscles to evacuate

fluid lodged in the canal (hence the bulbo-cavernosus muscle is termed the accelerator urinæ, vel ejaculator seminis), and to increase the turgescence of the penis during erection ; and it is impossible to conceive how seminal fluid could be ejaculated by means of the bulbo-cavernosus without its admixture with urine—a contingency which would undoubtedly destroy its fecundating property, and which, in short, never occurs in the normal state of the parts. Budge's views are again in conflict with Kupressow's experiments. After the manner of Heidenhain and Colberg, Kupressow introduced a canula, containing warm water, into the ureter; the canula being kept in position by a ligature, and a simple arrangement sufficing to supply fresh warm water when that in the tube became cool. The spinal cord of rabbits was divided at various parts to determine the centre of innervation of the bladder ; and in order to test the accuracy of Budge's experiments, the urethra was repeatedly slit up. Notwithstanding that the muscular power of the urethra was thus destroyed urine was retained in the bladder. After the death of the animals, a water column of from eight to sixteen centimetres high in the ureters caused fluid to escape from the bladder, while prior to death a height of thirty-six to fifty-six centimetres was required. At the level of the *fifth lumbar* vertebra section of the cord produced the same effect as death of the animal, though rather slowly. Section at the sixth produced them at once. Between the first and fourth lumbar vertebræ section of the cord produced no variation in the height of the column of water necessary to overcome the muscular power of the sphincter. Dr Kupressow, accordingly, concludes that in rabbits the centre of

vesical innervation is at the level of the fifth and sixth lumbar vertebræ, and that under the term *sphincter vesicæ* should also be included the circular fibres surrounding the commencement of the urethra. An interesting fact was further noted, that the relative potency of the latter part of the sphincter varied according to the sex of the animals; for while in males slitting of the urethra diminished the height of water column requisite to cause an overflow to one-half, in females the same operation reduced the column but one-fourth.\*

Like the ureter and bladder, the urethra consists of a mucous membrane, beneath which muscular fibres, disposed longitudinally and circularly, exist. The mucous membrane of the urethra is thin and delicate, continuous posteriorly with the mucous membrane of the bladder, and anteriorly with the investing membrane of the glans penis and skin. Of its muscular fibres, the internal is that portion which is longitudinally arranged, and is derived from the deep muscular layer of the bladder. The nerves of the urethra are numerous, and are derived from the pudic nerve, sacral plexus, and hypogastric plexus. Viewed, therefore, as a muscular tube with an intermediate reservoir, abundantly supplied with nerves, and of a somewhat complicated mechanism, it will be obvious that obstructions to the flow of urine in the urinary canal are resolvable into—1st, such as are physiological; 2d, such as are pathological; and 3d, such as are mechanical.

These conditions may be thus tabulated:—

\* Lancet. 1872.

(a) *Physiological Retention of Urine.*

## Spasm

of ureter,	of bladder,	of urethra,
	From mental emotion.	
	Retention from shock.	

(b) *Pathological Retention of Urine.*

## Paralysis.

Permanent.		Transient.	
(a)	From affections of the head.	(a)	From affections of the head.
(b)	" " of the cord.	" "	of the cord.
		"	old age.
		"	over distension of the bladder.
		"	reflex irritation.

## Retention from vesical inflammation.

"	"	strangulated hernia.
"	"	hernia of the bladder.
"	"	prolapsus of the bladder.
"	"	vesical tumours.
"	"	certain uterine conditions, comprising—
		(a) retained menses.
		(b) pressure of impregnated uterus.
"	"	pressure from conditions of the rectum.
"	"	traumatic hæmorrhage into the bladder.
"	"	rupture of the bladder.
"	"	inflammation of the urethra—(a) specific.
"	"	" " (b) non-specific.
"	"	laceration of the urethra.
"	"	tumours in the scrotum, penis, perinæum.
"	"	enlarged prostate.
"	"	diseased prostate.
"	"	permanent or organic stricture.
"	"	spasmodic stricture.
"	"	phimosis, and other abnormal conditions of the prepuce.

(c) *Mechanical Retention.*

Stone, and foreign bodies, in urinary passages.

PHYSIOLOGICAL RETENTION.—*Spasm*—The possible existence of spasm of the ureter, and retention of urine arising therefrom, is based upon the fact, that the ureters manifest contractility on the application of stimuli ; that irritation of the roots of the spinal nerves, and of the sympathetic, which contains fibres of these, produce powerful peristaltic action of the ureters proceeding towards the bladder, and that pain, accompanied with the symptoms of obstruction, is referred to this region ; and that these are capable of removal by narcotics and antispasmodics. I believe there is no such thing, strictly speaking, as idiopathic spasm ; some exciting cause must be invariably present. But even as spasm of the bowels and other involuntary muscles, such as the diaphragm, takes place under particular circumstances, there is no apparent reason why spasm of the ureter should not likewise occur under analogous conditions ; and it is assuredly within the range of possibility, that spasm of the ureter may at least contribute towards the condition of retention. As has been indicated, warm baths, narcotics, and antispasmodics should afford the best results in the treatment of this condition.

Accumulation of flatus in the bowels, by pressing upon the ureter, has been assigned a place in the etiology of retention ; but this alleged cause is less worthy of serious consideration than the foregoing.

*Spasm of the bladder* is of occasional occurrence, and the contraction of the organ may take place to such a degree as to effect complete closure of the orifices of the ureters, and thus give rise to a species of retention, whereby the urine is retained in the ureters and pelvis of the kidney. This may be artificially produced



by irritation of the inferior portion of the abdominal sympathetic.

*Symptoms.*—The bladder is contracted into a hard ball; intense pain is complained of, extending to the penis, sometimes causing erection of the organ, and to the bowel, occasioning painful tenesmus. In the lumbar region, the symptoms are those of calculous nephralgia—cold perspirations, paleness of surface, weak and frequent pulse, and general irritability. From cystitis, spasm of the bladder is to be distinguished by the history of the case, presenting, as it does, the feature of suddenness of attack, absence of fever, and of pain on pressure (this causing, as in colic, rather relief), by the paroxysmal nature of the pain, and the previously normal condition of the urine. Independently of idiopathic spasms of the bladder, symptomatic spasm may be due to stone, morbid conditions of the urine, morbid secretions from the bladder itself in certain diseased states, irritating diuretics, such as turpentine, cantharides, and sympathetic irritation from gout, hysteria, cold, and injuries of the rectum.

*Treatment.*—The treatment of spasm of the bladder should be based on the presumed cause. If due to foreign bodies, fissured anus, or other forms of peripheral irritation, these conditions will necessitate attention. Idiopathic spasm will demand attention to the state of the urine, and, if necessary, in addition to the administration of such agents as chloral, hyoscyamus, and camphor, the exhibition of alkalies. Antispasmodics, from which there is a sufficient variety to select, are indicated; and if the case be sufficiently urgent, the inhalation of chloroform or ether may be resorted to. Diseased conditions of the mucous membrane of the

bladder, when diagnosed, must be treated according to the particular indications which each case presents.

*Retention from mental emotion* is a manifestation of urinary disorder occasionally met with, though it is of such a nature as not to have merited attention in medical works. It is well, however, that its existence should be recognised, as it may lapse into the variety of vesical paralysis due to over-distension of the bladder. It is usually, indeed almost invariably, met with in persons of a highly nervous temperament, happening to be placed in circumstances where a feeling of shame, or other mental emotion, is such that the co-ordination of nervous power between the sympathetic and motor nerves is disturbed to such a degree as to occasion temporary paralysis. Usually this state passes away rapidly; it is analogous to what occurs in very sensitive people losing to such an extent the power of the muscles of the fore-arm, as in writing in presence of on-lookers, or other unusual circumstances. If it remain so long that the bladder becomes too full, catheterism may be required.

*Spasm of the Urethra.*—Like the ureters and bladder, the urethra is sometimes the seat of idiopathic spasm. In such cases coitus is often followed by a greater facility of micturition, as in cases of retention from organic stricture. If too frequently repeated, the result is rather retention. Civiale records the following case of this nature:—

Captain B., aged 36, of a robust constitution, had suffered from many attacks of gonorrhœa, of which he was perfectly cured. His health was excellent; he suffered neither from fatigues of the campaign nor venereal excesses. Meanwhile, following sexual in-

dulgence on one occasion, he experienced an impossibility of micturating. All the usual means of relief proved ineffectual. The introduction of an instrument gave issue to three pints of urine, and terminated patient's agonies. The function of the bladder was immediately re-established. Some months after that the patient was threatened with a similar affection. After having explored the bladder, I satisfied myself, says Civiale, that the urethra was much more irritable above the *symphysis pubis* than in health; the introduction of bougies removed this preternatural irritability. On his own part, the patient found the necessity of having recourse more moderately to sexual intercourse, and since then he experienced no inconvenience.

Somewhat analogous to the foregoing is the following case from the same author:—M. N., a Portuguese, æt. 30, had had many gonorrhœas treated by antiphlogistics. There remained a slight discharge, which the least change of diet aggravated. Moderate coitus caused only a slight embarrassment of micturition during some hours. But whenever it was repeated, it was preceded by a condition of prolonged erection, which caused a complete retention of urine. This occasioned, twice the most alarming symptoms, removed by catheterism. From that time M. N. abstained from venereal excesses, and his urine was made in a full stream.

The etiology of the foregoing condition is doubtless spasm of the perineal muscles, due to a hyperæsthetic condition of the pelvic nerves, especially of the pudic.

Spasm of the urethra has, however, been caused by sudden exposure to cold, moral emotion (as above), fright, &c., &c.

## RETENTION FROM VESICAL PARALYSIS.

The performance of its normal function by the bladder depends on the four following conditions:—*1st*, A normal reciprocal action between the motor nerves of the viscus and the brain; *2d*, a healthy condition of the sensory nerves; *3dly*, a perfect potential co-ordination between the three sets of nerves supplied to the bladder—the motor, the sensory, and the sympathetic; and *4thly*, an unimpaired state of the muscular fibres of the bladder.

Of the first variety, familiar instances are furnished in typhus and other fevers, where possibly, from temporary congestion, aberrant impressions are made upon the pedunculus and the restiforme body; in cases of paraplegia from organic disease of the nervous centres, and in other instances where the nerves themselves are unfitted, from structural derangement, for the transmission of motor power to the muscular fibres. Violent twists of the spinal cord, blows, and shocks, may cause, in like manner, retention, more or less permanent, as the cause is aggravated. Effusion into the ventricles of the brain is sometimes characterised by like consequences.

Retention and incontinence occur at times apparently in a very capricious manner; but we think the anomaly is capable of explanation by a consideration of the physiological facts already submitted.

.We accept the fact that section of the cord above the sacral plexus invariably sets up ischuria and dilatation of the bladder, but never incontinence; for, in the first place, the motor influence of the vesical nerves is at once completely withdrawn, by their connection

with the brain being thus severed. It must be assumed in this case that motor paralysis of the entire muscular structure of the bladder is induced, the *circular* as well as the *longitudinal*; and why should retention exist? From the fact of the ischuria, which admits of a sufficiently palpable explanation, and the absence of incontinence, it is inferred by Budge and his disciples that there is an increased reflex irritability, according to which assumption there is established a heightened reflex tone of the urethral muscles, whereby the retention is occasioned. But supposing it be admitted *causa argumenti* that an increased reflex excitation is thus induced, of what can it avail *when the motor power of the nerve supplying the urethral muscles (the pudic) must be destroyed by section of the cord, as well as that of the vesical nerves?* The pudic is a branch of the sacral plexus; and if the motor power of this plexus be destroyed by section of the cord in respect of the vesical muscular fibres, it is somewhat difficult to conceive how the same thing should not occur with respect to the urethral muscles. But incontinence does set in as a secondary event; and to reconcile this unfortunate occurrence with the fragile theory at issue, we are informed that the event is due to hydrostatic pressure. Thus hydrostatic pressure, from accumulation of urine in a bladder deprived of motor power, overcomes the power of muscles of no insignificant proportions, whose potency is augmented by reflex excitation! It is a somewhat unfortunate circumstance for not a few patients and surgeons, that canine and human bladders present very diverse phenomena. An explanation more in accordance with physiology is desiderated, and the following is confidently sug-

gested:—In a distended condition, the prostatic portion of the urethra is the most spacious portion of the canal, but, except during the act of micturition, it is closed by means of the action of its muscular fibres. This object is achieved, as in the case of the proper sphincters, by means of the sympathetic. If the cord be divided above the sacral plexus, motor power will certainly be withdrawn from the muscular fibres of the entire bladder; but the prostatic and the urethral branches of the hypogastric are so intimately connected with the aortic and solar plexuses, that section of the cord *in this region* will not necessarily interfere with their function. But the influence which the sympathetic thus exercises over the urethra is necessarily not potent; and it is perfectly intelligible that hydrostatic pressure would overcome it, when it could not possibly have any such effect on the muscles alluded to, and under the circumstances quoted. That incontinence is occasioned in dogs after section of the *anterior roots* of the three sacral nerves, admits of an easy explanation, independently of Budge's theory; for we have seen that the motor fibres are largely supplied to the neck of the bladder, and the division of a limited number of the sacral nerves might cause paralysis of the sphincter; sensation, and the motor power of the *longitudinal fibres* remaining unimpaired.

Valentin has long ago demonstrated that irritation of the roots of the spinal nerves, and of the sympathetic, which contains the fibres of these, produced powerful peristaltic action of the ureter proceeding towards the bladder. Irritation of the inferior portion of the abdominal sympathetic excited strong contractions of the bladder; this effect was occasioned more

particularly by irritating the sacral portions of the sympathetic. The same result was produced by irritation of the roots of the middle and inferior abdominal nerves of the spine, *but no effect was produced unless the portion of the sympathetic distributed to the particular part was entire.* Contractions of the vas deferens and vesiculæ seminales were likewise produced by irritation of the inferior lumbar and highest sacral portions of the sympathetic; and in like manner, contractions of the Fallopian tubes and of the uterus, from the fundus to the neck, may be excited by irritation of the same nerves as those which excite the rectum, viz., the lower lumbar and first sacral nerves of the spine. From his experiments Valentin drew the following inferences:—

1. That all parts which exhibit involuntary movement are excited to action, like voluntary muscles, by stimuli applied to the nerves with which they are endowed.
2. That from whatever part of the sympathetic system their nerves arise their actions are governed by the same laws.
3. That the sympathetic system has the following relations with other nerves:—(a) its motor fibres are distributed to remoter parts of the body; (b) still throughout their long course there is no connection between them, so that definite contractions are excited according to the fibres irritated, as in other nerves; (c) that these motor fibres originally proceed from the cerebro-spinal system, and that irritation of their origins acts through the sympathetic trunks.\*

This view of the influence of the sympathetic affords a rational explanation, besides, of certain other phenomena attendant on spinal injuries which would be otherwise perplexing.

\* Valentin on the Functions of the Cerebral Nerves and the Sympathetic.

According to the particular region of the cord injured, certain affections of the genito-urinary system are developed.

In cases of injury of the lower portion of the spinal cord, proportionate to the severity, paralysis more or less complete of the sphincter and detrusor fibres ensues, and the urine accumulates in the viscus according to gravitation, as the position of the body permits, and overflows therefrom by hydrostatic pressure. Intestinal paralysis is in like manner induced, and as a consequence, troublesome constipation. Should the injury exist, however, in any part of the dorsal region above the tenth vertebra, priapism is a frequent manifestation of the disorder. Associated with this peculiar feature, the temperature of the body below the seat of injury is markedly increased, and as a matter of course paraplegia, more or less complete, is invariably present. Further, it must be noted that as a symptom of spinal injury, priapism does not occur when the cord is injured in the cervical region, or from affections of the cerebro-spinal axis. It is the function, as we have seen, of the sympathetic system to regulate nutrition and exercise an inhibitory influence over the blood-vessels; let this influence be withdrawn, and increased vascularity and consequent elevation of temperature result, as Bernard's experiments and others of a similar kind so amply demonstrate. Priapism is as much an indication of debility as palpitation of the heart, and, as we have seen, it is never associated with injuries of the lower portion of the spine though there be vesical paralysis, because the sympathetic is independent of its relations with the cord in this region; and the explanation of its occurrence in the region of the spinal cord,



which we have indicated, appears to be the following. Notwithstanding the connection of the sympathetic with the cord in the lumbar and sacral regions, injury of this portion of the spine does not effect it owing to its intimate, or rather preponderating, connection with the aortic and solar plexuses; but occurring in any part of the cord from the fifth to the tenth dorsal vertebræ inclusive, the abdominal portion of the sympathetic is severed entirely from the influence of the cord, by the impression on the greater and lesser splanchnic nerves. From the other branches of the sympathetic it is significant to note that the splanchnic nerves are contradistinguished by their whiteness and general firmness, owing to the preponderance of spinal nerves in their sheaths; and consequently, no doubt, to their possession of a more intimate physiological connection with the cord than any other of the abdominal branches of the same system. There is every reason to infer that it is from this region that the vaso-motor nerves of the penis originate. In this case, therefore, the inhibitory influence of the sympathetic is removed from the blood-vessels of the penis, the heart continues to beat with unabated vigour, and blood is pumped into the cellular structure of the organ, occasioning enlargement simply by mechanical dilation. Should the spinal injury be still higher paralytic myosis is of not uncommon occurrence.

It is probable, therefore, that in cases of paralytic retention the sympathetic is more immediately concerned than usually supposed to be, and that the apparently capricious occurrence of retention and incontinence thus admit of intelligible explanation.

The inability to pass urine is only absolutely com-

plete when there exists paralysis of the abdominal muscles, for as long as they admit of being exerted the urine can be forced out in a slow current, though in small quantities. In complete paralysis of the bladder contraction of the viscus does not occur though the urine be entirely withdrawn; and in these cases, inasmuch as there is sensorial as well as motor paralysis, the accumulation of urine causes no pain, and the attention of the surgeon is not unfrequently directed to this state by the supposition of an abdominal tumour, dropsy, or presumed incontinence of urine.

Paralysis due to affections of the brain and spinal cord are unmistakably recognised by the antecedent history of the case; such as injury from indirect violence, or the gradual development of cerebral and spinal symptoms characteristic of organic lesions; under all circumstances a careful examination of the abdomen should be instituted. Reflex irritation may undoubtedly occasion disease of the nerves; and sometimes morbid processes seem to originate in the membranes of cord and bony canal. In his "Observations in Surgery and Morbid Anatomy," Mr Howship narrates a case in which the origins of all the nerves on the basis of the brain, as well as those of the medulla spinalis, were enveloped in a puriform fluid; and this condition he found in one instance associated with other effects of progressive paralysis, due to disease of the joint between the atlas and odontoid. The capsule of the joint was exceedingly thickened, and the process, therefore, forced backwards, inducing a fatal compression of the spinal marrow.

*Treatment.*—Paralysis of the bladder, when due to affections of the head or spine, must be treated accord-

ing to the indications presented by the supposed cause.

As to the propriety of catheterism, upon this as upon every other question which engages the attention of sublunary intelligence, opinion conflicts. Thus, Mr Jonathan Hutchinson observes, "There is, I think, room for much doubt as to whether the usual practice of relieving the bladder by the catheter is judicious. In a few cases, where the fracture is in a certain part of the lumbar region, the bladder is involved in hyperæsthesia, and the pain caused by its detention necessitates interference. These, however, are very rare, and, in almost all cases, the bladder fills without causing any discomfort, and when full runs over.

"After a few days it regains a certain amount of tone and empties itself very frequently. At this stage we have troublesome incontinence, and but little retention. Now, if the catheter be used from the first, inflammation of the urethra and bladder is, I think, almost certain to occur, and the urine will become loaded with pus and mucus. I suspect that cystitis is, in some cases, one of the influences which brings about the patient's death by exhaustion. Not unfrequently ulcerations of the mucous membrane of the bladder occur. There is a specimen in the museum from a fractured spine case, in which a fistula passes from the membranous urethra into the rectum, no doubt in connection with the use of catheters. Why should cystitis thus constantly follow the use of catheters? Seeing that there is no impediment to the introduction of instruments, that they give the patient no pain, and are used with the greatest ease, why should they produce so much more irritation than we usually

observe when they are employed for other reasons? I think we must admit that it is probable that the mucous membrane of the bladder when paralysed is in a state especially prone to inflame, just as the eye is after paralysis of the fifth nerve. The practical question before us is, whether to permit the retention to continue until overflow takes place is less likely to cause this cystitis than the use of instruments. My own experience has been in favour of non-interference, and I quite intend in the future to make a full trial of the plan."


Upon Mr Hutchinson's views the following remarks may be made, and against his theory some weighty objections may be urged:—

In cases of paraplegia there is an undoubted depression of vital function, and, consequently, a remarkable proneness to the occurrence of bed sores. When the influence of the sympathetic is removed from the blood-vessels, as we have seen, two factors of the inflammatory process, viz., increased vascularity and elevation of temperature, are immediately induced. Hence, from the vascular debility, prominent parts of the body, which would, in health resist a certain pressure, break down under the conditions of paraplegia; and further, it is perfectly conceivable that the tissues in this state are less tolerant of irritation than in a healthy condition; but given two causes of irritation, it is expedient to eliminate the one from which the most danger is likely to result. I cannot help thinking, basing my opinion confessedly on a much more limited experience than that of the author quoted, that the tendency to cystitis in this state is somewhat over-rated. In cases of paraplegia, it must be borne in

mind that urine retained in the bladder is particularly liable to decomposition, containing as it does so frequently an abundance of lithates, earthy phosphates, and other organic ingredients. This state of the urine is primarily due no doubt to the depressed state of the nervous system, and again to the condition of the bladder which favours decomposition; thus the two conditions mutually react on one another. If the bladder be not carefully emptied in these cases, experience amply testifies that decomposition of retained urine is very apt to induce structural disorganisation of the viscus.

Besides, urine which has become ammoniacal in the bladder may seriously react on the health of the patient, particularly if it be absorbed by a solution of continuity, for carbonate of ammonia exercises a toxic influence over the organism. To prevent this, a free acid should be introduced into the circulation through the stomach. For this purpose, benzoic acid, which is rapidly transformed in the system into uric acid, may be used to prevent the ammoniacal decomposition.

But, supposing Mr Hutchinson's treatment to be adopted, what is likely to happen? That only the supernatant fluid in the bladder, in all probability, will be voided, while the lower stratum of urine will remain indefinitely, and occasion those complications which it is so expedient to avoid. Moreover, Mr Hutchinson's treatment could only apply to certain cases, for assuredly there are others where the power of micturition is completely lost. Further, muscular contractility is more apt to occur, beyond question, when the muscular fibres of the bladder are kept as much as possible in the condition of physiological rest, which it need hardly



be mentioned, is not the distended state of the bladder. Indeed, such treatment, instead of predisposing to the restoration of muscular energy, is particularly apt to cause atony—a fact with which we are so familiar in the cases of debility of the detrusor fibres, which the occasional over-distension of the bladder so frequently induces.

Instead, therefore, of viewing this *laissez faire* treatment with favour, it is, in my opinion, to be strongly reprehended. Its risks and inconveniences are incomparably greater than the alleged complications ascribed to judicious catheterism. The bladder should, in cases of paraplegia, never be allowed to suffer great distension; and should there be any evidence of any affection of the mucous membrane as arising from decomposition of the urine, washing, by means of the double catheter, with a weak solution of permanganate of potash, or oxygenated water, is to be enjoined.

Of internal remedies, tincture of steel, strychnine, ergot of rye, and phosphorus, may be carefully administered; but should there exist decided evidences of organic lesion, the prospect of much benefit from these or any other means is very remote.

Dr Wernich of Berlin\* has directed attention to the distension of the bladder so often observed in cases of poisoning by ergot of rye. This he ascribes to the tonic power which the ergot exercises over the sphincter vesicæ, and indicating its therapeutic value in the treatment of paralysis, as it frequently exists after typhus fever, in the nocturnal enuresis of children, and the senile incontinence of general weakness. During childbirth care should be taken that, after the

\* Centralblatt für die Medizinischen Wissenschaften.

administration of ergot, labour is not impeded by a distended bladder.

Should the vesical affection be presumably due to shock from direct violence to the cord, or to the cerebro-spinal system, and likely to be transient, the electromagnetic current promises good results. This may be exercised by the introduction of a vesical sound, isolated to within a short distance of its extremity, into the bladder, connecting it with one pole of a battery; with the other pole are attached the ordinary handle and moist sponge, which may be applied from above the pubis to the perineum, or over the lumbar vertebræ. The application may be daily or twice daily, and should last for from three to five minutes.

On this subject Dr Althaus remarks :—" Experience has shown me that it is neither necessary nor expedient to apply the current directly to the tissue of the bladder itself, as we might do by means of an insulated sound, with a free metallic knob introduced into that organ. Direct galvanism of the full bladder is objectionable, because a powerful chemical decomposition of the urine is the consequence of such a proceeding, giving rise to symptoms of fainting, owing to the sudden distension of the viscus by the gases which are set free; while direct galvanism of the empty bladder appears to produce an irritating effect upon its mucous membrane. External galvanism produces none of these inconveniences, and is thoroughly effective, so that it should in all cases be employed in lieu of direct internal galvanism. The position of the electrodes should vary according to the seat of the affection. Where we have reason to believe that it is due to disease involving the pedunculus cerebri, one director connected with the negative

pole should be placed to the back of the head, and another connected with the positive pole above the os pubis. The latter electrode should have a large surface. In cases of disease of the lumbar portion of the spinal cord, the negative pole is placed to the lower part of the lumbar spine, and the positive in the same position as above. Finally, in local paralysis of the bladder, we may either use the same arrangement of the electrodes as in spinal disease, or both directors may be placed above the os pubis."

Dr Althaus further recommends that the current be intermittent rather than continuative, an application of from three to four minutes sufficing in respect to time.

#### RETENTION FROM OLD AGE.

Muscular paralysis occurs under the three following conditions:—*1st*, When centripetal impressions are incapable of transmission to the central nervous system in consequence of disorganisation or lesion of the sensory nerves, a condition to which the term anæsthesia (*α αἰσθησις*) is familiarly applied; *2dly*, when motor or centrifugal impressions are similarly influenced, a state in contradistinction to the former indicated by the term acinesia (*α κίνησις*); and, *3dly*, when the muscular fibres are themselves incompetent for the performance of their function from structural changes.

One of the most notable manifestations of the insidious incursion of the phenomena of declining years, is that of vesical debility. This may occur in common with a general atony of the muscular structure of the body, without any apparent connection with, or depend-



ence upon, affections of the nervous system, or it may be associated with them. We recognise the latter condition if due to cerebral affections by their characteristic mental alienations, and the manifestations of local paralysis. If associated with spinal affections, impaired power of locomotion, diminished sensibility in the lower extremities; and the fact that while the bladder may be enormously distended the patient is unconscious of his condition, will tend to elucidate the diagnosis. Retention from paralysis is to be distinguished from retention from obstruction by the absence of the subjective symptom of pain, by the facility with which an instrument can be introduced into the bladder, and that when so introduced the urine flows from the viscus in a slow stream, just according to the degree of paralysis and the extent to which the abdominal muscles are capable of co-operating in the act of micturition. The power of expelling urine in the ordinary debility of old age is not usually lost. The patient simply finds that the act of micturition occupies a longer time, that a greater exertion is required in its performance, that the stream is less full, and that a feeling of imperfect evacuation is more or less experienced. Should a residuum of urine remain in the bladder, under these circumstances, as we have seen above, it is apt to become putrid, and consequently occasion inflammation of the bladder, and other complications.

According to the degree of muscular power, or to the causes which occasion its impairment, so will be the efficacy of remedial agents, and other therapeutical appliances. If due to marked organic disease of the nervous centres, a condition almost invariably progres-

sive, the prognosis must necessarily be unfavourable; if due to temporary over-distention, or to transient impression on the nervous centres in an otherwise healthy subject, the case will present a more promising aspect. In treatment it is of primary importance that undue accumulation of urine be prevented, that all sources of irritation be removed, more particularly as occurring in the bladder itself, and that tone be imparted to its muscular fibres by the judicious selection of internal medicines, blistering to the region of the spine more presumably affected, or antiphlogistic measures if required in the early stages, and by the use of galvanism as referred to in the foregoing section.

We have seen that the bladder is abundantly supplied with nerves from each of the three divisions of the nervous system, each class subserving according to their distribution the performance of a special part in the act of micturition. That certain remedial agents act specifically upon the different nerves has been satisfactorily demonstrated; according, therefore, to the particular fibres of the bladder at fault the selection of remedies becomes a question of scientific precision. If there be paralysis of the detrusor fibres we employ tincture of steel, ergot of rye, strychnine, &c. (for though the sympathetic is distributed to the upper and back portion of the bladder, and regulates in all probability the action of the detrusor fibres, it contains motor branches derived from the spine). If there be hyperæsthesia of the detrusor fibres, as in enuresis, a condition due presumably to certain states of the sympathetic, chloral, belladonna, camphor, &c., are indicated. With respect to opium in small doses, it is to be remarked, that it is a motor excitant, an effect indicated in its acting as a

cardiac stimulant, and may, therefore, be beneficially conjoined with pure genito-urinary stimulants.

It is in such cases that *Retention from over-distention* is most apt to occur, though it may take place in perfectly healthy individuals. Its causes are, primarily neglect to empty the viscus when desire exists; while exposure to cold predisposes to muscular debility in the aged, and in like manner inordinate indulgence in alcoholic liquors, which, in addition to stimulating the kidney to augmented secretion, superinduces the narcotic effects of alcohol on an already weakened organ. Catheterism will be demanded, in the first place, and then general treatment if the exigencies of the case so demanded. To this section also belong certain cases of retention after childbirth, the pressure of the child's head in the pelvis obstructing the urinary canal in the mother, till accumulation of urine has taken place to such a degree as to occasion temporary paralysis; while others may be due to nerve compression, a fact indicated by the frequency with which pains extending down the thigh are complained of, when the head is engaged in the pelvis.

#### RETENTION FROM REFLEX IRRITATION.

We have seen that an intimate nervous intercommunication takes place between the nerves of the pelvic viscera, we have descanted upon the interesting fact that the motor nerves proper of the bladder are chiefly distributed to the region of the sphincter vesicæ, and, accordingly, the pathological significance of reflex irritation in its bearings on retention, will be obvious. In addition, therefore, to the irritation, and, possibly,

to the mechanical obstruction to the passage of urine exercised by the presence of adventitious growths, irritation from certain conditions of the prepuce and rectum may occasion spasm of the sphincter, and consequent retention. If the irritation be of a mild description, as due to the presence of ascarides, &c., irritability of the bladder and enuresis are induced; but if of a more violent nature, as from operations on the prepuce and rectum, for the removal of hæmorrhoids, &c., retention from spasm is the result. A case of the latter description occurred recently in my practice. On the 29th November last, by the advice of a surgical friend, I operated on Mr O—, for external hæmorrhoids by means of the ligature—the pedunculated nature of the tumours and the patient's abhorrence of a cutting operation dictating this procedure. Nothing worthy of note occurred during the transfixing and tying of the tumours. On the evening of the same day considerable difficulty was experienced in voiding urine, an occurrence which the administration of a sedative draught containing opium and hyoscyamus to a great extent removed. On the 2d December, during an examination of the hæmorrhoids, with a view to ascertain the condition of the ligatures, a considerable amount of irritation was thereby caused. Subsequently, this local irritation became more intense, and occasioned a return of the retention. For fully two hours, as I was informed, patient could not pass urine, though making the greatest efforts to do so. The cause being clear, the application of hot fomentations to the pained part, and the administration of opium and hyoscyamus, remedied this condition. A short time afterwards the piles were removed by the

scissors, and the retention did not recur. The treatment of this form of retention will obviously resolve itself into a recognition of the cause, and its removal according to the principles enunciated.

#### RETENTION OF URINE FROM SHOCK.

Independently of structural lesion, simple shock, affecting the portion of the nervous system by which the bladder is supplied, may be followed by temporary retention. This effect is of the same nature as the familiar influence on the respiratory muscles caused by blows over the epigastric region, the shock to the pneumogastric for the time being suspending its vital function. If the violence be sufficiently severe, the heart may be similarly affected, and the impression so long continued that death results.

Retention of urine, of the variety under consideration, is usually observed in cases when a fall upon the back has been sustained, or from violent compression of the lower part of the body, as in the cases of railway accidents, known as "buffer" accidents. Of this variety I saw one, with a highly intelligent country practitioner, in February last. In this case there was considerable ecchymosis over the lower part of the abdomen; the penis, particularly the glans, presented a similar appearance of greater intensity, and the scrotum was similarly affected. The catheter was passed with ease; the urine withdrawn was perfectly normal, but the power of micturition was in perfect abeyance. From cases presenting analogous features, but complicated with the existence of laceration of the urethra, cases of retention from shock are to be dis-

tinguished by the facility with which catheterism is effected, the perfect continuity of the urethral surface as judged by the passage of the catheter, the absence of blood in the urine, and the evidence afforded by the *tactus eruditus* of the characteristic difference in the sensation communicated by infiltration of urine in the cellular tissue, and simple ecchymosis.

The treatment of this condition will mainly consist in judicious catheterism.

The consideration of the remaining causes of retention of urine, chiefly pathological, do not come within the intended scope of the present undertaking.\*

\* *Vide* Classification, page 14.

## CHAPTER II.

## IRRITABLE BLADDER ; STRANGURY.

CONTENTS :—"Functional" Disease—Irritable Bladder ; its Varieties—  
The Relation of the Lithic and Oxalic Acid Diathesis to "Irritable  
Bladder"—Period of Life at which "Irritable Bladder" occurs—  
Treatment—Strangury ; its Varieties—Treatment of Strangury—  
Worms in the Bladder—Varieties of Vesical Worms ; Symptoms  
and Treatment of Worms in the Bladder.

Conformably with that property of living textures, which we have termed the law of material correlation, on which normal function essentially depends, and through the operation of which all rational curative efforts must be made, we have seen how its violations are associated with functional or organic derangements of a corresponding nature.

By the term "functional" as applied to departures from health, an imperfection of knowledge is confessedly conveyed, for it is impossible to conceive the slightest somatic disturbance of the normal equilibrium regulating the integrity of the living body without some antecedent molecular cacogenesis, unrecognisable though it be. Perhaps it is not too much to anticipate that the time may come when a genuine scientific advancement in knowledge will render the use of this probationary term purposeless.

Irritable bladder, in the strict signification of the term, comes essentially under the category of functional

diseases, and it should be consequently restricted to those states in which the viscus manifests an extreme sensitiveness *to the presence of healthy urine*, in the absence of any recognisable disease of its own structure, or any other organ capable of sympathetically acting upon it. In the course of these remarks, we have adverted sufficiently to the intimate nervous communication between the bladder and the circumjacent organs, and to enumerate the diseases of which irritability of the bladder constitutes a symptom, would be to repeat much of what has already been said, and enumerate, indeed, almost all the diseases of the pelvic viscera.

The most typical variety of irritable bladder is associated with the condition to which the vague term "nervous" is applied; where, generally from some mental emotion of a transient nature, hyperæsthesia of the sensory nerves is occasioned. Of this nature is hysteria: in other cases the phenomenon is associated with general debility, neuralgia, and irritation of the brain and spinal marrow, though, when so arising, the condition can hardly be denominated functional, the cause being recognisable.

Nor can it be so considered when it is manifestly due to dyspepsia and the lithic acid, or the oxalic acid diathesis, as the acrid nature of the urine in these states affords palpable explanation; neither can the condition be said to be functional in the very opposite state of the urine, viz., when it is too alkaline, for departures from the normal composition of the urine in either way heightens alike the sensibility of the bladder.\*

\* Kaupp, "Archiv. f. Phys. Heilk.," 1856, has demonstrated that, with increased frequency of micturition, there is an absolute increase in the quantity of urine and urea discharged in twenty-four hours.



Irritable bladder is a disease, as a rule, of early or middle life, and occurs with equal frequency in both sexes. It is characterised, as the name implies, by frequency of micturition, tenesmus, and a feeling of undefinable uneasiness in the loins and region of the bladder. The health becomes manifestly undermined, the patient becoming weak, emaciated, and irritable; but this applies more particularly to those cases in which organic changes in the viscus are superinduced, when the urine is generally of a greenish whey colour, of considerable specific gravity, often serous, and depositing phosphates and lithates, and micturition is attended with scalding pain along the urethra.

The *treatment* of irritable bladder will be based upon the presumed cause. If purely nervous, or associated with neuralgia, nervine tonics are indicated; such as the preparations of iron, of which the tinct. ferri mur. of the Edinburgh Pharmacopœia is to be preferred,\* also quinine, nux vomica, &c. If the affection be symptomatic of the gouty, and rheumatic, or oxalic acid diathesis, the treatment already referred to will be the most appropriate; while hysteria, irritation of the nervous centres, &c., will demand the special treatment appropriate to them.

*Strangury* (dysuria difficilis et dolorosica, sæpiens ardens, urinæ immissio—Sauvages) (urinæ parce, guttata, frequens, dolorosa, micturitio—Linnæus) may in like manner be said to be rather a symptom than a disease, though antiquity has prescriptively conferred upon it the right of the latter recognition. It is very accurately described in the brief terms of Sauvages

\* The tincture of the British Pharmacopœia soon becomes decomposed by the oxidation of the iron.

and Linnæus, and it differs mainly from the ordinary forms of enuresis in presenting the symptom of pain, due to a transient irritation of the proximate cause.

Mason Good describes no less than the six following varieties of strangury :—

Spasmodica,	.	.	Spasmodic strangury.
Ardens,	.	.	Scalding strangury.
Callosa,	.	.	Callous strangury.
Mucosa,	.	.	Mucous strangury.
Helmenthica,	.	.	Vermiculous strangury.
Polyposa,	.	.	Polypous strangury.

The most cursory glance at the varieties of strangury thus tabulated will suffice to exhibit the fancifulness of its nature, for without spasm and scalding micturition, strangury could not be said to exist; again the vesical irritability due to stricture, which Mason Good terms callous strangury, has been already explained, and presents no feature to justify its classification under this section; and of mucous strangury so-called, it must be said that it simply indicates a consequential affection of the bladder, if the cause of the irritation has been sufficiently prolonged.

Strangury differs essentially from the other spasmodic affections of the bladder which we have been considering in this regard, viz., that in strangury, there is a consentaneous, instead of an alternate spasmodic affection of the muscular fibres of the bladder, complicated with the effects of irritation, which, if sufficiently prolonged or repeated, may result in inflammation of the organ.

The vermiculous and polypose strangury of the

learned author alluded to, cannot with propriety be considered forms of this affection; but as the former is both rare and interesting, brief allusion will be made to it immediately.

The most characteristic and frequent form of strangury is that due to the absorption of cantharadin from the application of fly blisters, and its elimination by the urine. It may, in like manner, be occasioned by the internal administration of turpentine and other stimulating diuretics in excessive doses, and also by acrid articles of diet, and stimulating vegetables, as asparagus, &c.

*The treatment of strangury* may be considered almost entirely prophylactic. When blisters are applied over a large surface with active absorptive powers, owing to cutaneous tenderness or to anatomical peculiarity, the patient should be made to drink copiously of mucilaginous fluids, by means of which the irritant, if absorbed, is correspondingly diluted, so as to render it proportionately innocuous. Camphor has long been held in high estimation for its efficacy in the treatment of strangury, either given internally, or applied to the skin in conjunction with the blister. The following testimony to its efficacy in the latter respect is given by Percival:—"In three instances blisters sprinkled with camphor were repeatedly applied without strangury, and as uniformly, when the camphor was omitted, with the occurrence of that symptom. I will not say that in all constitutions camphor will obviate strangury, nor in all constitutions will cantharides without camphor produce it."

So painful an affection is strangury, from the absorption of cantharadin, that its avoidance is urgently desiderated. I have seen the agony of such intensity

that perspiration flowed copiously from the forehead, the features pinched, and presenting a sardonic expression very significant of suffering. In such cases warm baths, full doses of opium, and copious libations of such mucilaginous drinks as barley water, linseed tea, &c., afford the most relief.

The presence of *worms in the bladder* gives rise to a form of vesical irritation to which allusion has not hitherto been made. In some cases they are discovered in the organ after death, and in others discharged from the urethra during life. They occur in various forms, sometimes like the larvæ of insects, in other instances of the fluke or gourd variety; and in some cases solitary—an example of the last variety being recorded by Dr Barry of Dublin, in the case of a man, aged fifty, who discharged from his urethra a solitary worm “above an inch in length, of the thickness of the smallest sort of eel, and not unlike it in shape, ending in a sharp-pointed tail.” It was discharged dead, though death had evidently been of recent date. For several years the man suffered from the following symptoms:—He discharged urine frequently, and mingled with blood, although the act was unaccompanied with pain in the urinary canal. His health had become impaired; he was feverish, troubled with anorexia, and his strength diminished. From all these symptoms he recovered on the discharge of the worm.

Mr Lawrence, in the second volume of the “Medico-Chirurgical Transactions,” likewise contributes the following very interesting particulars to the literature of this subject. The patient, a female of twenty-four years of age, had long laboured under symptoms of vesical irritation, which had been pronounced of a cal-

culous nature. Ultimately she discharged three or four worms of a peculiar variety from the urethra; this continued more or less for some time, more especially when their discharge was facilitated by the use of injections, or the use of the catheter in the bladder during a night. This discharge of worms continued for the period of a year. At one time so many as twenty-two were passed, and altogether not less than from eight hundred to a thousand were thus voided! They varied in size, being sometimes small, and at other times measuring from four to eight inches in length, and were usually discharged dead. Their presence in the bladder has been accounted for on the supposition that their ova are first introduced into the body with food, and that they transude through the arteries of the bladder, as the white corpuscles of the blood sometimes do.

Instances of worms in the bladder are mentioned by some of the older writers, as Rhodius, Bonnetus, Bartholin, Tulpius, Barry, Henkel, and Acrel. But two varieties of vesical worms have been discovered; the one by Lawrence, as mentioned, the other by Mr Curling. The one described by Lawrence is the *Spiroptera*. They were remarkably slender in the middle, from which they gradually increased towards the extremities, which were small and tapering. One of the surfaces of the body was marked by a double row of small protuberances, while the other was marked by a groove with two rising edges. When first voided they were soft and of a yellowish colour. Under the microscope the body seemed homogeneous, and with no distinct organisation. The smaller variety were semitransparent, and of a rounded form with pointed

ends. The worm discovered by Mr Curling has been named by him the *Dactylus aculeatus*, owing to its peculiar ring-like appearance. (Med. Chir. Trans. vol. ii. page 274).

The *Symptoms* caused by the presence of worms in the bladder are equivocal. Pain is complained of; micturition is frequent; spasm is occasional; and there is usually derangement of the digestive functions. On passing a sound, contact with a soft mass is elicited. The treatment will consist in evacuation; the injection of small quantities of carbolic acid, or vinegar sufficiently diluted, and the internal administration of turpentine, and other diuretics.

## CHAPTER III.

ON THE PATHOLOGY AND TREATMENT OF NOCTURNAL  
ENURESIS AND SPERMATIC INCONTINENCE.

SYNONYMS.—('Ενουπέω); Incontinentia urinæ (*Latin*); Incontinence d'urine (*French*); Incontinentia urinæ (*Ger.*); Enuresi (*Ital.*)—Spermatorrhœa (Σπέρμα, ρεω).—Spermorrhagia (σπέρμα, Author); Spermatorrhée (*French*); Samenfluss (*Ger.*); Spermatorrea (*Ital.*).

CONTENTS :—Organic Functions—Hysteria, Metromania, and their Allied Diseases—Pathology of Enuresis, and of Spermorrhagia—Secretion of Semen—Functions of the Vesiculæ Seminales—Limits of Procreative Capacity—Secretion of Cowper's Glands—Is Semen Discharged with the Urine in Health?—Is Semen Reabsorbed into the System?—Tabes Dorsalis—Relations of Cerebellum and Sexual Functions—Puberty—Circumstances which influence the Development of the Reproductive Faculty—Excessive Seminal Emission a Pathological State—Seminal Incontinence in its relation to Mental States—Reflex Spinal Paralysis and Epilepsy; their connection with Genito-Urinary Irritation—Correlation of Symptoms as arising from Sexual Excesses and Masturbation—Varieties and Causes of Spermorrhagia—The Analogies and Relations of Nocturnal Enuresis and Seminal Incontinence—Diagnosis and Prognosis of Spermorrhagia—Treatment.

Normal function essentially consists in a due equilibrium of nervous influence. It is regulated from two poles, so to speak, the psychical and the somatic; and when undue elevation or depression occurs on either side, functional or organic changes may be the result. The machinery whereby nervous influence is regulated are the sensory or afferent nerves, and the motor or efferent nerves. Performing functions subsidiary to the former, are the inhibitory nerves, or those which restrain or diminish action, and to the latter the secre-

tory and trophic. This distinction is, however, not yet satisfactorily established.

The sensory nerves, under the influence of stimuli, transmit, probably by molecular action, impressions to the central organ, the brain, through the medium of which they are communicated to the motor. In this manner abnormal peripheral irritation may occasion functional disease, quite apart from the local pathological changes it may induce. This may be termed the somatic side of the balance; on the other hand, the very converse of this may happen through the medium of the mind—the psychical side of the balance.

That the various secretions of the body, and many of the involuntary or muscular movements, are powerfully influenced by mental emotions, is a fundamental principle in physiology. We find examples of this influence in profuse lachrymation from grief, the arrest of the secretion of milk from strong mental impression, the manifestation of blushing, the accelerated action of the heart, or the depression of its action, from diffidence, anger, fear, &c. This law, that of emotional stimulation, as it may be termed, finds expression in the old aphorism, “ubi stimulus, ibi humerorum uberior adfluxus.”

Reverting to our subject, the close relationship between the functional aberrations of the genito-urinary system and the brain, and consequently their interdependence, is clearly demonstrated by the distribution of the sympathetic nerve. It is through this nerve in a peculiar manner, that the conditions enumerated influence secretion. As the nerve of common feeling (*coenæsthesia*, *κοινὸς αἰσθησις*), and regulator of organic functions, the sympathetic is to a great extent independent of the brain and spinal marrow. Its sensations have been resolved into three separate foci,—(a)



the focus of generation, (b) the phrenic focus, and (c) the *plexus solaris*.

“The focus of generation forms opposite to the brain, as it were, the other pole of the organisation. The more complete the structures belonging to this focus are developed, the less so is the cerebrum (for the contrary is affirmed of the cerebellum) and conversely.”\* The phrenic focus regulates the actions of the heart, diaphragm, and the stomach, in conjunction with the pneumogastric nerve. The *plexus solaris* is formed by two semi-lunar arcs of the abdominal plexus, and of the superior mesenteric plexus; it also receives the greater and lesser splanchnic nerves, the termination of the right pneumogastric, and filaments from the right phrenic nerve. From this centre, accompanying the various branches of the aorta as “governors,” to carry out our analogy, the sympathetic distributes branches. In addition, therefore, to the diaphragmatic, gastric, hepatic, splenic, supra-renal, renal, mesenteric, and aortic, we have spermatic plexuses. Besides these branches, the pelvic organs derive branches from the lumbar and sacral portions of the parent nerve. Hence there are described the hæmorrhoidal, vesical, prostatic, vaginal, and ovarian plexuses. “By the *cœnæsthesis*, states of our body are revealed to us, which have their seat in the sphere of vegetative life, wherein the nerves which belong to it spread themselves. These states are (a) general—corporeal heaviness and buoyancy, atony, toniety; (b) special—hunger, thirst, sexual instinct,” &c.†

Our position, therefore, is as follows:—That functional diseases, *i.e.* aberrations of organic muscular movements, glands, &c., may be due to either psychical or somatic causes, in other words, to peripheral, or

\* Feuchtersleben's Psychology.

† Op. cit.

central irritation, or to a combination of both, and that consequently the explanation thereof, and their rational treatment, must be resolved into psychical and somatic.

I am thus a firm believer in the theory which associates hysteria with some disturbance of ovarian, vaginal, or uterine cœnæsthesia. For instance, but recently M. Charcot had under his care at the Salpêtrière four or five cases in which hysteria and epileptiform attacks were associated with ovarian irritation and unilateral anæsthesia. One of these was a healthy-looking girl of nineteen, who suffered from pain in the right ovarian region, and had been the subject of hysterical attacks of an epileptiform character for some time. At the time of visit, on one occasion, she was in one of her fits, with violent convulsive movements of her limbs. M. Charcot immediately applied firm pressure with both hands deeply towards the right side of the pelvis, and the convulsions were at once checked, the patient became quiet and sensible, and sat up as if wakening from a dream. The attack returned, but a repetition of the same treatment speedily removed it. A similar affection occurred in a half-witted girl of eighteen. She was subject to hysteria simulating epilepsy, pain in the left ovarian region, irregular menstruation, and complete anæsthesia of the left half of the body. There were other cases of a kindred nature in the hospital at the same time. All presented the following marked features,—pain in the neighbourhood of the ovary, attacks of epileptiform hysteria, relieved or checked by pressure in the ovarian region, unilateral anæsthesia generally of the same side, and affecting the whole of the lateral half of the body, and limited exactly to the

middle line, and spinal hyperæsthesia or "spinal irritation." In most of the cases there was irregularity of menstruation, but the seizures did not correspond to the catamenial period. The sight of one eye was usually affected. The anæsthesia was perfect and unmistakable, as patients bore with indifference having large hair-pins run through folds of the skin. M. Charcot considers this a special form of hysteria, and the prognosis as regards cure to be very unfavourable. Louyer-Villermay relates the case of a young lady resident in a convent, who had such a violent attack of metromania, that she died in the midst of an extraordinary convulsion. After death the left ovary was found much enlarged, and full of thickened matter. The Fallopian tube was in a like condition. Helwich speaks of a female who during many years manifested an extreme repugnance to marital relations, but who, at an advanced period of life, had venereal appetites so pronounced as to make her abandon herself to all manner of obscenities. Post-mortem examination disclosed on the right side of the uterus four reniform tumours; and the ovary of the same side presented vesicles, which, on being incised, gave vent to about 30 grammes of black matter. To modified impressions of this nature—a paralysing influence being made on the splanchnic—must be ascribed the abundant secretion of urine so pathognomic of the Protean malady, the circulation of blood through the kidney being accelerated by the extent to which the inhibitory power of the sympathetic is withdrawn. On the other hand, the influence of a strong mental emotion may either remove or prevent the hysterical paroxysm. With respect to enuresis, the disturbing agency is, in the great majority of in-

stances, of a somatic nature, while in the case of spermatic incontinence, its prototype, it may be either somatic or psychical, or a combination of both. Enuresis more frequently occurs at the periods of infancy and of declining years, and according as it may so occur, it receives a different pathological explanation. In childhood, it is almost invariably due to the irritation of worms (muscular branch of the fourth sacral nerve), congenital phimosis (pudic, and hypogastric plexus of the sympathetic), the prepuce being often adherent to a greater or less extent to the glands penis, vesical calculi, unusual density and consequent acidity of urine; while, in some cases there may be absolutely a superabundant secretion of urine. The presence of stone is indicated, in children, often by prolapsus of the rectum and pain in the point of the penis, while in adults the pain is usually felt over the hypogastric region. These causes being removed, the normal nervous equilibrium is restored, and the complaint remedied, as a rule. But if the hyperæsthesia has been of long continuation, debility of muscular fibre, or atony may have ensued, and tonic treatment is indicated in addition. In advanced life, the conditions alluded to are generally absent, and the cause of the enuresis is found in diseased prostate, vesical catarrh, atony of the sphincter and bladder generally,—a condition most frequently associated with general muscular atrophy, or affections of the spinal cord.

Of the two sets of muscular fibres of which the bladder is composed, it is a disputed point which set is more immediately under the influence of the will. In the act of micturition, it is only when the detrusor muscles cease to *overpower* the sphincter, that the

bladder is closed; and the attempt to explain the occurrence of enuresis by the fact that muscular relaxation occurs during repose, and is participated in by the *sphincter vesicæ*, I look upon as fallacious and untenable. It is indeed a wise provision that it should be otherwise.

But while enuresis in children is in the vast majority of instances due to somatic disturbance, in some cases a psychical cause is present. That is to say, involuntary discharge of urine may be due to a state of dreaming, in which the necessity of micturition as arising from the normal stimulus is present to the mind. The detrusor muscles are thus brought into action precisely as in voluntary micturition. Desault (now a considerable time since) refers the occurrence of involuntary micturition rather to impaired sensation. Thus, he observes:—"La sensation qui met en jeu la contractilité de la vessie, et accompagne l'éjection des urines, est si foible, que cette fonction se fait sans un acte formel de la volonté, sans exciter même une impression assez vive pour interrompre le sommeil." Though his mode of cure indicates a psychical impression—"La crainte les rend plus attentifs au besoin d'uriner, et fait qu'ils épient, en quelque sort, le premier aiguillon qui annonce ce besoin. C'est à cette manière d'agir, que l'on doit rapporter les guérisons qu'ont produit une foule de moyens plus effrayans les uns que les autres; c'est ainsi qu'on a vu des enfans être pour toujours délivrés de cette incommodité, en leur faisant écraser des souris vivantes dans les mains, en les faisant assister au lit d'un mourant," &c.

Putting out of consideration the causes of enuresis in infancy, it may occur in the adult from yet another

cause, viz., debility due to sexual excesses or onanism. The repeated stimuli to the spinal cord and sympathetic being, according to a well-known law of nervous excitability, followed by muscular relaxation—*castus rara minget*. With respect to enlargement of the prostate as a cause of enuresis, cases of overflowing must be distinguished from those of incontinence. Mistakes in diagnosis are of frequent occurrence from disregard of this precaution. Incontinence of urine has also been known to occur from the passing of *too large* bougies and catheters, likewise from the gradual dilatation of the female urethra for the removal of stone. With the pathology of nocturnal or diurnal enuresis is intimately associated that of spermatic incontinence, an affliction which has long proved, and continues to prove, a potent instrument of imposition and misery in the hands of quacks both in and out of the profession.

While spermorrhagia (to coin a convenient term)\* presents in many respects striking analogies to enuresis, it differs in some essential and, pathologically and physiologically speaking, important respects. In the former case we have to deal with a functional aberration of a glandular secretory apparatus (excito-motor), in the latter simply with a muscular derangement of the reservoir of the urine. Seminal emission is a reflex act, and not immediately under the influence of the will; expulsion of urine, as we have seen, bears a different relation to volition.

It is in the cases of enuresis in which the sphincter

\* In the last edition I suggested the use of this word (Σπέρμα, ρήγνυμι), as being, by analogy, more correct than the term spermatorrhœa. Exception has, of course, been taken to it. I retain it, my opinion being still unchanged.

is at fault that these complaints can be more appropriately compared. The *sphincter vesicæ* is, equally with the muscular fibres of the vasa deferentia and vesiculæ, and the accessory muscles, an involuntary muscle. But again, while the act of micturition depends on the quantity of urine secreted, so also must seminal emission depend on the normal function of the testicles; and it is thus only by a correct appreciation of the function of the testicles in health, as in the case of all other organs, that we can pronounce where health ends and disease begins. This essential preliminary investigation it devolves upon us, as briefly as possible, to consider.

The organs by which the seminal fluid is secreted are the testicles, the vesiculæ seminales, the prostate, and Cowper's glands, each organ contributing its quota to the perfect semen. At the threshold of this part of our subject the following questions present themselves. Do the testicles continually secrete semen, as other glands constantly elaborate their peculiar secretions? Can the discharge of the peculiar secretion of the vesiculæ seminales, the prostate, and Cowper's glands take place independently of one another? Are the vesiculæ seminales merely the reservoirs of the seminal fluid?

DO THE TESTICLES CONSTANTLY SECRETE SEMEN? Judging from analogy, no one would hesitate to answer this question in the affirmative; but, like many other secretions, that of semen is regulated by certain conditions, so far as the rapidity and quantity of the secretion are concerned. It is the opinion of Kirkes that "the seminal fluid is probably after the period of puberty secreted constantly, though, *except under excitement*, very slowly, in the tubules of the testicles. From

these it passes along the vasa deferentia into the *vesiculæ seminales*, whence, if not expelled in emission, it may be discharged, as slowly as it enters them, either *with the urine*, which may remove minute quantities mingled with the mucus of the bladder and the secretion of the prostate, or from the urethra in the act of defæcation." To the proposition that the secretion of semen is influenced by mental excitement I assent; from the assertion that *in health* semen is removed from the *vesiculæ seminales* during defæcation, or micturition, I unhesitatingly differ. To this we shall revert in the proper time and place. Assuming in the mean time, what the present state of our knowledge on the subject justifies us in doing, that seminal fluid is constantly secreted, subject to variation from certain mental and physical conditions, one of three things it follows must happen; it must be *excreted* from the system in the form of an involuntary emission, be discharged with the urine with certain effete elements of tissue, or it must be reabsorbed into the system. It will be remarked in the above quotation from Kirkes, that he supports the generally received opinion that the *vesiculæ seminales* act as *reservoirs*.

Further, this physiologist remarks, "The seminal fluid\* secreted by the testicle is one of those secretions in which a process of development is combined after its formation by the secreting cells, and its discharge from them into the tubes. The principal part of this development consists in the formation of the peculiar

\* Vanquelin gives the following as the chemical composition of semen:—

Water,	.	.	.	.	900
Animal mucilage,	.	.	.	.	60
Soda,	.	.	.	.	10
Phosphate of lime,	.	.	.	.	30



bodies named *spermatozoids*, *seminal filaments*, or spermatozoa, the complete development of which in their full proportion of number is not achieved till the semen has reached the vesiculæ seminales. Earlier, after its first secretion, the semen contains none of these bodies, but granules, and round corpuscles, like large nuclei, enclosed within parent cells. These round corpuscles are the 'vesicles of evolution,' in the interior of which the spermatozoa are formed. They present a well-defined outline. They are usually embedded in granular matter. The parent cells sometimes contain but one vesicle of evolution. At other times more than one. They vary much in size, doubtless according to the stage of development, and are not usually found in conjunction with perfectly formed spermatozoa; their presence, consequently, in the seminal fluid indicates that the fluid has not remained long in the vesiculæ, and as a corollary may point to excessive coitus or spermorrhagia. To the vesiculæ seminales a double function may be assigned; for they both secrete some fluid to be added to that of the testicles, and serve as reservoirs for the seminal fluid. The former is their most constant and probably most important office; for in the horse, bear, and guinea pig, and several animals in which the vesiculæ seminales are large and of apparently active function, they do not communicate with the vasa deferentia, but pour their secretion separately, though it may be simultaneously, into the urethra. In like manner, MM. Prevost and Dumas have observed that the *vasa deferentia* in frogs open into the ureters, and that they form a lateral pouch, which enlarges much at the period of their rutting, and thus the urine contains true semen. In

man, also, when one testicle is lost, the corresponding vesicula seminalis suffers no atrophy, though its function as a reservoir is abrogated. But how the vesiculæ seminalis act as secreting organs is unknown; the peculiar brownish fluid which they contain after death does not properly represent their secretion, for it is different in appearance from anything discharged during life, and is mixed with semen. It is nearly certain, however, that this secretion contributes to the proper composition of the impregnating fluid; for in all animals in which they exist, and in which the generative functions are exercised at only one season of the year, the vesiculæ seminales, whether they communicate with the vasa deferentia or not, enlarge commensurately with the testicles at the approach of that season. That the vesiculæ are also reservoirs, in which the seminal fluid may lie for a time previous to its discharge, is shown by their commonly containing the seminal filaments in larger abundance than any portion of the seminal ducts themselves do. The fluid-like mucus also, which is discharged from the vesiculæ in straining during defæcation, commonly contains seminal filaments."

While the foregoing views express pretty accurately the most generally received opinions on the points at issue, are more in accordance with the physiological functions of other organs and the manifest purposes of adaptation, inasmuch as in animals which have no vesiculæ seminales a dilatation of the vas deferens fulfils the same object, different views have been entertained by Hunter, Bransby, Cooper, and following them by oven recent writers. Let us examine the evidence for and against the views that the vesiculæ

seminales are reservoirs of semen, for the inquiry has a highly important practical bearing.

Against the opinion that the vesiculæ act as reservoirs for the seminal fluid, it is urged that, even in castrated persons, the vesiculæ seminales are full; and Mr Milton considers the fact of his having examined the body of a pauper, eighty-four years old, and having found the seminal vesicles "as full of fluid as in a young person," when the testicles, as he thinks, must long have ceased to secrete, likewise fatal to this view.

To my mind, the finding of fluid in the vesiculæ of castrated persons simply shows that, independently of the testicles, the vesiculæ continue to secrete their own special secretion. Again, it is *not* a fact that the testicles cease to secrete semen even at the advanced age of eighty-four; and if it be assumed solely on account of the advanced age that the contents of the vesiculæ in Mr Milton's case were *not* seminal, the assumption is unwarrantable, for Casper relates the case of an invalid,\* aged *ninety-six*, who died under the care of a trustworthy observer, Dr Abel, who had the remarkable opportunity of observing a *number* of spermatozoa in the vesicles. Hence the finding of fluid in the vesiculæ at an age *under* ninety-six cannot invalidate the opinion that the vesiculæ act as seminal receptacles.† To show that at very advanced ages the testicles secrete semen, the following cases, likewise related by Casper, may be mentioned:—A carriage varnisher, aged sixty-five, who killed himself by slitting up his belly, had *numerous* zoosperms in his

\* Valentin's Physiology.

† Duplay found that the semen contained spermatozoa in thirty-seven cases out of fifty-one old men, nine of whom were more than eighty years old.

vesicles. An invalid, aged sixty-eight, whose death was occasioned by fracture of the pelvis, had a large number of zoosperms in his vesicles. Case seven may be quoted in Casper's own words—"A vigorous naturalist, *sixty years of age*, a married man, and father of a large family, and accustomed to the use of the microscope, whom I had interested in this question, examined with me for some time continuously his own semen after coitus. Here we found *the greatest variations*, which were accurately noted by both of us together. After coitus on the third day, reckoning from the last performance of the act, there was a *large number* of very *small* spermatozoa; after renewed coitus on the fourth day, *few* and *small*; after a pause of only two days, *none*; after a pause of only one day there was only a watery sperma, in which no zoosperms were found. At another time, on the fifth day after the last coitus, the zoosperms were very numerous; another time, after a pause of six days, they were *few* but *large in size*; four months after the last examination, and seventy-two hours after the last act, the zoosperms were *comparatively* very small; and at another time, on the third day after the last act, they were innumerable. Immediately after coitus, and before emptying the bladder, the urethra was twice examined. Twenty-four hours after the last act, a drop pressed out of the urethra exhibited *numerous small* zoosperms; at another time, after a three days' interval, there was not a single zoosperm." It may be contended against Casper's cases that the individuals examined were in a most favourable state for *post mortem* ejaculation, an occurrence not unfrequent even after natural death, for with the exception of two subjects dead, the one from

pyæmia the other from pneumonia, the others were asphyxiated, hanged, or drowned; circumstances under which ejaculation is nearly constant. Casper further relates thirteen cases in which zoosperms were found in the vesiculæ, but as they possess no peculiar interest, I shall content myself with referring to the original work; but he also relates eleven cases in which no zoosperms were found in the vesiculæ, and the conclusion at which he arrives is that "these observations prove, not only that the human seminal fluid does not always contain spermatoza, but also, that even in the same individual they are not always to be found. Whether, as it seems, long illness or excess *in venere* has an influence upon the origin and reproduction of these animalculæ, must remain for future and more extended observations to decide."

The important observations of Dr Davy, F.R.S., Assistant-Inspector of Army Hospitals, published in the "Edinburgh Medical and Surgical Journal" for 1838, confirm these views, and an outline of the cases examined is presented on p. 60.

In all these cases Dr Davy states that the testes were examined along with their associated organs, and that, except in the 18th and 20th cases, no animalcules could be discovered in the fluid expressed from the substance of the gland. When obtained in sufficient quantity for accurate observation the fluid secured was transparent, generally contained globules about the size of blood corpuscles, and invariably dense particles, from twelve to fifteen times smaller than the globules, and which, it has been surmised, are the ova of the spermatic entozoa. In the two instances Dr Davy remarks, in which spermatic animalcules were found

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## ANALYSIS OF DR DAVY'S CASES.

No.	Age	Disease.	Hours after death Examined.	Condition of the Vesicula Seminales.	Condition of the Vasa Deferentia.
1	30	{Pulmonary Tuberculosis, &c.}	6	{Contained a considerable quantity of fluid abounding in spermatic animalcules.	{About a drop of fluid in each vas deferens. Contained numerous animalcules, some in active motion.
2	57	{Cerebral Disease.	57	{Fluid small in quantity; browner than in duct, and contained abundant vestiges of spermatic animalcules.	{A minute portion of fluid; colour and appearance of pus.
3	39	{Pulmonary Consumption.	6	{Contents small in quantity, and gelatinous. No spermatic animalcules.	{Contained very many spermatic animalcules, all dead.
4	20	{Pulmonary Consumption.	11	{Small quantity of fluid, brownish, fragments of spermatic animalcules.	{Fluids in ducts more liquid. No spermatic animalcules.
5	32	{Latent Pulmonary Consumption.	16	{Turgid. Fluid opaque. Abounded in animalcules.	{Contents extremely minute—thin, like starch; fragments of spermatic animalcules.
6	39	{Gangrene of Lung, &c.	2	{The vesiculae shrunk. Little fluid. No animalcules.	{Fluid purulent-like in appearance. Abounded in animalcules in both dead testes.
7	42	{Pulmonary Consumption, diseased prostate, testes, &c.	37	{Moderately distended with fluid, of a light brownish hue, turbid and opaque. Full of animalcules.	{Fluid like that in vesiculae. Contained a few animalcules, many blood corpuscles, and some smaller particles.
8	32	{Bronchitis, &c.	32	{Moderately distended with purulent-like fluid, abounding in seminal animalcules.	{Contained a few animalcules, and many particles smaller than those of blood.
9	33	{Pulmonary Consumption.	15	{Fluid of a brownish hue, and semi-opaque. Abounding in animalcules.	{Fluid like diluted purulent matter. Contained a few seminal animalcules and minute globular particles.
10	20	{Pulmonary Consumption.	4	{Small quantity of fluid, thin, like starch. Contained many animalcules. Brownish colour.	{Fluid thin. Contained but one animalcule—debris of others.
11	27	{Pulmonary Consumption.	10	{Little fluid; thin brownish—a few animalcules.	{Very little fluid; no animalcules.
12	33	{Inflammation of Neck, &c.	26	{Thin fluid; no spermatic animalcules—brownish hue. (Little hair on pubis or chin— <i>paries scrotales</i> were all small—had always shown an aversion to the female sex.)	{Minute portion of fluid; no spermatozoa. Contained small particles, and a few large globules.
13	29	{Pulmonary Consumption, &c.	27	{Contained very little fluid, thick, gelatinous, nearly transparent, and colourless. No spermatozoa.	{No fluid; testes natural size.
14	27	{Pulmonary Consumption.	32	{Moderately distended with fluid of just a perceptibly brownish hue—small number of animalcules.	{Less than a drop of fluid. Contained a few animalcules.
15	27	{Pleuritis and Pneumonia (Complicated organic) disease of bones, &c.)	36 & 12	{Pretty much fluid, brownish, and of a gelatinous consistency; very many animalcules.	{Very minute portion of fluid; no distinctly formed spermatozoa. Some globules and fragments of a peculiar entozoa.
16	33	{Pulmonary Consumption.	36 & 6	{No animalcules; merely globules of different sizes. Slightish brown fluid.	{Very little fluid—numerous minute globules—no animalcules.
17	31	{Pulmonary Consumption.	27	{Distended with fluid, brownish tint—abounded in animalcules and globules.	{A drop of fluid procured from each vas deferens. No animalcules, but globules of different sizes, some resembling fragments of animalcules.
18	49	{Meningitis.	17 & 10	{Fluid in vesiculae abounded in dead animalcules—brownish tint.	{Fluid abounded in animalcules—some alive and in languid motion.
19	30	{Consumption.	22	{One vesicula little fluid—other much; brownish, large number of animalcules, and some globules.	{Minute quantity of fluid; some globules and particles—no animalcules.
20	41	{Aneurism.	38 & 58	{Fluid of a greyish hue—abounded in animalcules.	{A drop of fluid—no animalcules; very many minute particles.

in the fluid of the tubuli, the quantity of the fluid was greater than in the others. From this table Dr Davy justly draws the inferences that the *vesiculæ* are seminal reservoirs, but that they also secrete a peculiar fluid of their own for admixture with the semen. The first inference is supported by the general resemblance, in several cases, of the fluid in the vasa deferentia and the vesiculæ, and of the existence of the characteristic spermatic animalcules in the fluid of the vesiculæ in every instance in which they were detected in the fluid of the vasa deferentia. The second inference is supported by there being a certain difference in almost every case between the fluid of the vesiculæ and that of the vasa deferentia, and especially by the circumstance that the difference of the quality is most perceptible in the fluid of the fundus,—being most out of the way of being readily mixed with the fluid of the testes. The fluid in the vesiculæ, Dr Davy thinks, will be found more dilute than that in the vasa deferentia. With respect to the colour of the fluid in the vesiculæ, Hunter was of opinion that it was naturally of a brownish hue. This appears questionable; and Dr Davy is disposed to think that coloration is a *post mortem* effect, as the fluid partakes less of this hue the sooner it is examined after death. In Dr Davy's cases, instances occurred in which it was colourless; and Hunter himself, relating his examination of the vesicula of two men suddenly deprived of life, the one killed by a cannon ball, the other by falling from a height, remarks that in the former "the fluid in the vasa deferentia was of a lighter colour than is usually found in men who have been dead a considerable time; but it was by no means like the semen either

in colour or smell." With respect to the latter, he remarks, "I inspected the body soon after the accident, and found the contents of the vesiculæ of a lightish whey-colour, having nothing of the smell of semen, and in so fluid a state as to run out on cutting into them." \*

Conformably with the generally received opinion, Dr Davy looks upon the vesiculæ as performing a purpose similar to the gall bladder in the case of bile, and the urinary bladder for that of urine. He believes that in health semen is constantly secreted, and to pass as it is formed into its *reservoir*, from which in continent persons it is voided during defæcation, or in part absorbed. Dr Davy further remarks, "Mr Hunter, in accordance with the opinion which he had formed of the use of the vesiculæ, did not admit this. He believed that the fluid rather accumulated in the testes, and gave rise there to annoyance, requiring its evacuation by a disturbing act—a dangerous doctrine, and one for which there is, to modern science, no sufficient evidence. In opposition to the doctrine of Hunter, I may further state, that I have frequently examined microscopically the fluid from the urethra, following the alvine evacuations, and I have always found it, in a healthy person, abounding in animalcules, the majority of which have always been dead; and thus, perhaps, seeming to indicate that the vesiculæ are *cloacæ* as well as *reservoirs*, and are essentially designed for man to enable him to control and to exercise that moral check on the passions by which he should be

\* Observations on Certain Parts of the Animal Economy, 1786, page 28; *vide* also, Manuel d'Anatomie Générale, Descriptive, et Pathologique. Par J. F. Meckel, traduit par A. Jourdon et G. Buschet, tom. iii. p. 643



distinguished from brute animals, and without which no considerable advance can be made in civilisation or in elevation of individual condition and character."

When the contents of the vesiculæ seminales are examined shortly after death, the spermatozoa are sometimes found alive. My impression, from the examination of the tenacious fluid passed at stool, is that if the spermatozoa have lain too long in the vesiculæ they die and shrivel up.\* Their activity is diminished, or even entirely destroyed, by cold, heat, discharge of electricity, hydrocyanic acid, strychnine, a too acid condition of the vaginal mucus, and a too alkaline condition of the uterine mucus (*Donné*). On the other hand, ordinary mucus, pus, milk, saliva, and urine exercise no influence on this mobility.

Spermatozoa were first observed in 1677, by Leeuwenhoeck. The *Journal des Savants* contains the first account of them by Hartsoecker. They are usually described as consisting of a body, or head and tail. The head is ovoid and flattened. The head presents a cavity, which I have seen diminish and enlarge by alternate contraction and dilation of the surrounding structure. Their total length is about  $\frac{1}{20}$ th of a millimètre, and the diameter of the head from  $\frac{1}{200}$ th to  $\frac{1}{300}$ th of a millimètre. Certain authors (Valentin, Schwann, Pouchet) have asserted their discovery of organs of generation in spermatozoa. This is certainly an error. What then are the additional inferences that may be adduced with reference to the functions of the vesiculæ? We have seen that, in

\* After writing the above, I find that this observation has also been made by Dr Davy.

arriving at any conclusion, the factor of age up to ninety-six must be dismissed; not only that, but if more ancient authority may be relied upon, Pliny relates that Masinissa had a *son* born to him after he was eighty-six years of age, showing fecundating property of the spermatozoa at this advanced period of life; and Cato, the Roman senator, had a child born to him at the age of eighty. Alexander Benedictus knew a German who had one in his ninetieth year; and Lemnius mentions another, who, at the age of an hundred, married a woman of thirty, by whom he had a numerous offspring. Felix Platerus, a celebrated physician, who died at Basle in 1614, records that his father married at seventy-two years of age, and had six sons; at eighty-two years of age his wife bore him a daughter. I have the most direct testimony myself to the fact of the marriage of a man of ninety-six, who lived for ten years afterwards, and had a family of four by his wife. Old Parr is alleged to have possessed sexual capacity at one hundred and forty years of age! According to Palmorius, he was tried for his life at the age of one hundred, *ob vim illatum virgini*.

Does the presence of spermatozoa in the fluid prove it to be seminal? Then seminal fluid has been found in the vesiculæ in the majority of Casper's cases. Does the *absence* of spermatozoa in the fluid found in the vesiculæ show that the fluid is *not* seminal? It does not. Then surely Casper's and Davy's cases prove conclusively that the vesiculæ seminales act as seminal reservoirs. Casper's "case seven" further shows, what will be very generally conceded, that venereal excesses diminish the consistency of the semen—render it more fluid; that the seminal fluid requires time for its per-

fect maturation in the vesiculæ, and consequently, that repeated coitus also diminishes the number of spermatozoa by preventing their growth ; for as sexual congress was frequent, the spermatozoa were smaller, till ultimately the fluid ejaculated was reduced to a watery sperma with *no* zoosperms. The dense particles referred to by Dr Davy, as being found in the fluid of the testes, are probably formed into perfect spermatozoa in the vesiculæ. After repeated coitus the secretion of the vesiculæ alone may be ejaculated, or no discharge at all may take place. All these circumstances must be held as conclusively proving, that in addition to their secreting a fluid peculiar to themselves, the vesiculæ act as seminal reservoirs.

*Can the peculiar secretion of the prostate, Cowper's Glands, and the vesiculæ occur independently of one another, or of the secretion of the testicle?*

So far as the secretion of the testicle is concerned, castration will decide the question. The possession of testicles, or indeed a testicle, presumes procreative power, and the absence of both would be necessarily presumptive of sterility ; but procreative ability must not be inferred from the fact that the power of gratifying sexual desire exists, even though the act be attended with ejaculation. Thus Sir Astley Cowper relates the case of a man in whom the testicles had been extirpated for twenty-nine years. For the first twelve months he was capable of sexual congress, and had ejaculations, or at least the same feeling as if these had occurred. Subsequently his erections became less frequent, and the act of coitus was unattended with the feeling of ejaculation. Ten years after the performance of the operation he told Sir Astley that

during the past year he had only on one occasion had sexual intercourse. Twenty-eight years afterwards he had imperfect erections. Sexual desire gradually diminished, but on rare occasions he indulged in sexual intercourse, though without result, and only once or twice he had libidinous dreams, without any ejaculation. Krahmer relates a confirmatory case, that of a young man, twenty-two years of age, who cut off his testicles and epididymis with a razor. Between the eleventh and twelfth day he had an involuntary seminal emission, but during eighteen years afterwards the sexual power had entirely ceased.

Dr L. Gosselin has published in the "*Archives Générales de Médecine*," for Sept. 1853, the result of experiments on animals for the determination of this point, and of the observation of nineteen patients suffering from double induration of the epididymis following gonorrhœa. The spermatic cord of one side being exposed in two dogs, the vas deferens was detached from the other portions of the cord and a portion of it excised. After several months the animals were killed, and examination disclosed the testicles subjected to the experiment in all respects normal, and differing from that of the opposite testicle in that the convolutions of the epididymis of the former were distended with fluid containing abundance of spermatozoa. The isolation of the testicle, therefore, in dogs at all events, does not interfere with the nutrition of the testicle, or its power of secreting semen. Of the nineteen cases in the human subject under the care of Gosselin, some occurred in private, and the rest at the Hôpital du Midi. The period of induration, to that of observation by Dr Gosselin, extended from a few weeks to ten years.

In all of them the induration was seated at the lower portion of the epididymis. There was no variation from the normal state in size, nor tenderness on pressure ; none of them had their sexual powers impaired, and there was complete ejaculation unattended with pain. The semen seemed normal, but subjected to microscopical examination it *was found to be entirely destitute of spermatozoa*. The accuracy of the microscopic examination was confirmed by Robin, Verneuil, and others. . In two of the cases, treatment being continued, resolution of the induration took place, in one in three, in the other in nine months, and coincidentally spermatozoa were found in the urine.

The inference is therefore inevitable, that while the testicles secrete the fecundating portion of the semen, the accessory organs, the prostate, vesiculæ, and Cowper's glands likewise secrete a portion of perfect semen, and that their contents may be discharged independently of the testicular portion of the semen. Gosselin concludes that to the portion of the semen derived from the latter organs is due the colour, smell, and other chemical peculiarities, and this opinion is confirmed, as we shall presently see, by Dr Kraus, editor of the "Vienna Medical Times." M. Godard has confirmed Gosselin's observations in more than thirty cases of double epididymitis. In every instance spermatozoa were absent.

Venereal excesses diminish the quantity of spermatozoa. Thus M. Liegeois, of the Hôpital du Midi, Paris, relates the following case :—"A student, after having had three to four connections daily for ten successive days, asked me to examine his semen. Out of seven or eight preparations which I made I could not



discover any spermatozoa. There existed no lesion of the testicle. Some months later the same person brought me a new sample of spermatic fluid, but this time after three weeks of sexual abstinence. I then found spermatozoa in enormous quantity, covering nearly the whole field of the instrument." And it is suggested by M. Liegéois that the cases of idiopathic "aspermatozie" mentioned by Hirtz are explicable on the ground of sexual excesses. Hence it is inferred that infecundity is due to excesses, and moderation of the conjugal relations is enjoined for the begetting of offspring.

We are not even authorised to affirm that the presence of spermatozoa in the semen implies the power of procreation, for these spermatozoa must be endowed with motion, and even if endowed with motion, an abnormal molecular arrangement may destroy the fecundating property of the semen.

It is not so easy to determine whether the secretion of the prostate can be discharged independently of that of Cowper's glands, and the vesiculæ, or *vice versa*. This must necessarily be conjectural, as on account of the anatomical relationships the one cannot be separated from the other. I incline to think, however, that the prostatic fluid is at times separately discharged, and this brings us to consider the nature of the fluid discharged at stool, when the bowels are costive, and during relaxed states of the body generally. The argument that it is not seminal when spermatozoa cannot be discovered in it, we have seen to be valueless. In supporting the assertion that it is not semen, John Hunter contended that it is not of the same colour.\*

\* Herodotus (Thalia, c. 101) makes a curious statement. Referring to a tribe of Indians called Padæi, he observes:—"The communication between

What is the value of this argument? Gosselin believes that the semen owes its colour, odour, and chemical reactions to the vesiculæ, and his cases fully warrant this belief. More recently, Kraus of Vienna, to whom we have already referred as corroborating these opinions, asserts, that seminal fluid, as long as it remains within the testes, vesiculæ, and other seminal passages, is colourless and scentless, being in appearance exactly like fresh honey while deposited in the comb; and in its reactions it is neutral. Only when it has quitted the passages and arrived in the urethra does it acquire its white colour, and its peculiar faint smell. This smell has been compared to that arising from an egg in the first stages of decomposition.

Dr Kraus further adds, that it is during its passage through the prostatic portion of the urethra that the secretion of this gland imparts its white colour to the semen, and confers upon it the property of coagulating when exposed to the air (alkaline reaction).

Prout has remarked that the prostatic secretion is precipitated by acetic acid. A careful examination has not enabled me to confirm this observation, solution rather than precipitation, according to my experience, being the result of the addition of strong acetic acid.

What, then, is this fluid? Is it seminal? While these arguments do *not* prove that it is not seminal, I am satisfied that while it may in some cases *be* seminal, in the great majority of instances it is *not* so.

the sexes is like that of the beasts, open and unrestrained. They are all of the same complexion, and much resembling the Ethiopians. The semen which their males emit is not, like that of other men, white, but black, like their bodies, which is also the case with the Ethiopians!"

Semen si probe concoctum fuerit, colore album et splendens esse oportet, ut vel hinc pateat quam parum vere Herodotus scribat semen nigrum Ethiopes promere. (Rodericus a Castro de universa mulierum medicina.)

I have said in the *majority* of instances it is *not* so, for cases have come under my notice where spermatozoa did exist in this fluid, proving it to be seminal. This I have seen in perfectly healthy individuals, the bowels being confined.\* Other cases have come under my notice at the Royal Infirmary of Glasgow, where semen was passed at stool, the bowels being quite relaxed, and where coitus could not be accomplished owing to premature seminal ejaculation. Rayer also states that he attended two patients who passed pure semen at stool, recognisable by the large quantity of spermatozoa which the fluid contained. A person passing semen at stool would *a priori* be expected to present appearances of debilitated health, and I am bound to express myself less decidedly than I did in the former edition against the frequency of this occurrence. No doubt in the great majority of instances it is the prostatic secretion that is voided, the cause being the pressure of faecal accumulation in the lower bowel against the rectum.

A glance at the relative anatomical position of the parts will corroborate this belief. The situation at which accumulation of faeces in the rectum will press with greatest force antero-posteriorly, is at a point corresponding to a line drawn between the prostate gland and tip of the coccyx. Higher up, the capacity of the pelvis is greater; the vesiculæ are placed as it

\* Subsequent to the writing of the above I noticed the following in Trousseau's work on Clinical Medicine. After referring to the two classes of cases he remarks:—"It is otherwise in respect of spermatorrhœal patients having habitual seminal emissions not only in the act of defecation, but also during micturition. In the first referred to class of cases the seminal flux only takes place in small quantity, and under the influence of a violent effort, while, in the latter, it supervenes when there is no straining—when the motions are diarrhœal—as well as when they are hard and solid."



might seem designedly on either side of the base of the bladder, and thus removed from the ordinary contents of the bowels. That the fæces do so press is demonstrated by the fact that when the bowels are costive, and during defæcation, the bladder full, the flow of urine is temporarily arrested by the pressure, from behind, on the prostatic portion of the urethra. Again, the fluid thus discharged is much thinner than normal seminal fluid. While, therefore, it is my conviction that *in the majority of instances* this discharge—the source of much uneasiness to patients—is from the prostate, I am bound to conclude that facts are wanting to prove that involuntary seminal emission may *not so* occur; nay, that my experience proves the contrary.

Referring to this portion of our subject, Mr Benjamin Philips, F.R.S., observes:—"At one time I doubted whether this fluid were spermatic, it is usually so smooth, transparent, and homogeneous; but if it be examined under the microscope, spermatozoa can usually be observed in it. Its thin fluid character has induced people to think that it was a depraved secretion become watery by exhaustion of the secretory organ; and sometimes it may be so; for if a person who complains of the constant escape of the thinner fluid has an ejaculation, the fluid will be thick and grumous. It is, therefore, most probable that the more fluid portion of the secretion which fills the seminal vesicles is most easily pressed out; and this is a reasonable explanation of this feature of seminal discharges."\*

Finally, Cullerier, comprehending under the term

\* Med. Gazette, 1845.

gonorrhœa in the proper sense of the term, the evacuation of spermatic fluid, admits two kinds; the one occurring during straining at stool, and, which disappears with the removal of the constipation, the other which resembles the diurnal pollution of Wichmann, simply the prostatic secretion.\*

Morgagni† observes that in men enfeebled by debauch, semen is evacuated without pleasurable feeling, or venereal excitation, by too hot baths, or when the bowels are loaded with hardened fæces.

The occurrence of any such discharge, while easily remedied, is not to be considered a manifestation of health.

In conformity with our plan, the next question which presents itself is, *Is semen discharged with the urine in health?*—to which the brief answer may be made, *assuredly not*. Neubauer and Vogel show that spermatozoa are found in the urine after coitus, and that they have been frequently noticed in the urine of patients suffering from typhus, and they detail their mode of examination and the influence of certain forms of urine on the behaviour of the spermatozoa. Lehmann remarks that urine containing spermatozoa very soon becomes alkaline.

Clemens has frequently noticed the passing away with the urine of imperfectly formed semen; the spermatozoa lying in the cells, and adhering by their head and tail to the envelope; the tails seldom showed any signs of motion, which only takes place in perfectly formed semen. Besides these spermatic cells, Clemens often observed in the urine of patients suffering from

\* De Causis et Sed. Morb., epist. 44, art. 16.

† Diction. des Sciences Méd., Art. Gonorrhœa, t. xix. pp. 4 and 5.

spermatorrhœa roundish cells of 0·0033 to 0·005''' diameter, filled with fine granules, which lay for the most part on the side of the cell. These cells are in reality the mother cells of the spermatozoa. Such elementary bodies are generally found in the last drop of the urine of patients who have been much depressed by loss of semen, and also in typhus fever patients.\*

From a careful examination of the urine of healthy individuals, the same authority infers that the urine is never seminiferous excepting after pollution or sexual intercourse. This accords with universal experience. The presence of semen in urine must be regarded then as a pathological condition save under the circumstances noted.

*Is semen re-absorbed into the system?* In a very able review of M. Lallemand's well-known and mischievous work on "Spermatic Discharges," in the first number of the Medico-Chirurgical Review (1848), the following passage occurs:—"M. Lallemand, in our opinion, attributes far too great an importance to prolonged *continence* as a direct cause of spermatorrhœa. *That a moderate exercise of the genital organs is the condition most favourable to the maintenance of their healthy condition, and the general well-being of the economy, is a fact which requires no proof*; but we conceive that M. Lallemand greatly exaggerates the ill consequences which ensue upon the withholding such exercise. In the first place, the condition of spermatic plethora, or distension of the vesiculæ, is not such a necessary consequence as he states it to be, and may be said to be in a great degree under the control of the individual. Even if the secretion of semen is of constant occur-

\* Canstatt's Jahresbericht 1860, p. 285.

rence, *the amount is much influenced* [the italics are mine] by the mental state operating through the nervous system, and by the demand made upon the gland. Thus, if an individual has frequent recourse to coitus, or without this, indulges in erotic thoughts, libidinous reading and conversation, or analagous practices, a large quantity of semen will be secreted; and in the latter case, not finding a natural ejection, it may lay the foundation of obstinate nocturnal pollution. This, indeed, may occur in any person without prior excitement of sensual ideas; but then it is usually both rare and moderate. And indeed the testicles and their secretion seem to possess a far greater power of accommodation to the exigencies of the economy than M. Lallemand is disposed to allow; and we imagine the instances of atrophy from mere disuse, *unaccompanied by prior disease, to be of very rare occurrence.* Certain it is, that many men, who have maintained a complete continence long after full manhood, have yet proved effective progenitors of children; while the number of cases of premature impotence, brought on by too early or excessive intercourse, would lead us to suspect that this is the more formidable of the two."

With the reservation that atrophy of the testicles in very rare cases may be produced by excess of venery or masturbation, we give to the foregoing our unqualified adherence, believing, as we do, that these opinions are in perfect harmony with physiology.

Of the authorities who maintain the reabsorption of semen may first be noticed Gosselin. Certain of his statements are not a little strange, nor wanting in the elements of powerful fancy. He says—"All physi-

ologists (?) acknowledge that of all the secreted fluids, semen most easily admits of absorption. In fact, in the best organised subjects, its excretion is neither continuous or regular. It is true that the vesiculæ are organs of reception; but their capacity is small, and their power of distension slight. Now, if these organs do not admit of a large accumulation of the fluid, and yet, on the other hand, nothing arrests or suspends its secretion, it is by means of a gradual and proportionate absorption that nature supplies this apparent deficiency in the anatomical arrangements.

Need I allude to the fact that such absorption of semen is regarded by all physiologists as of utility for the regular maintenance of our organs, and the exercise of all our functions. (*Sic*!!). Observe what takes place when the testes are absent, disappear, or are imperfectly developed. The semen is then absorbed in insufficient quantity, and all the organism suffers from this; the constitution continues feeble, while the body does not take on, or loses a portion of its masculine characters. Nature endeavours to provide for the regular conservation of the individual, by means of the absorption of the same products where excretion serves for the preservation of the species. When an obliteration takes place, the latter and most capital of these uses is suspended; but the other persists, the absorption of the semen throughout the spermatic passages prevents a distension of parts which might end in local mischief, while the beneficial influence of the secreted semen is imparted to the entire economy." It is by such arguments as these, plausible no doubt, that Gosselin, Haller, and others, support their view.

Human experience has abundantly shown that the

range of absurdities in medical science, as in everything else, is not narrow, and, accordingly, Haller is affiliated with the following opinions:—"The greater part of the semen—that which is the most valuable and the strongest smelling, that which has most force—is pumped back again into the blood, and there produces, as soon as it reaches the circulation, changes the most marvellous—the beard, the hair, the horn; it changes the voice and the manners; for age does not produce these changes in animals, it is the seminal fluid alone which can effect this. As we never remarked these changes in eunuchs." (Haller.)

Statements still more extravagant are found in certain books, but it is hoped that these will be taken at their proper estimate, and a reference to them in this place obviated. How the growth of beard in certain females can be reconciled with the above theory may well excite surprise, the more so that this abnormality has been regarded as a sign of female sterility, especially when coinciding with the absence of certain other feminine characteristics.

In defence of the opposite opinion Kölliker contends that "there are no certain facts in favour of an absorption of semen when formed, which could only take place in the *vasa deferentia* and *vesiculæ seminales*, for what is observed in animals after the rutting season is over has no reference to this point; and the very circumstance that in the situations above mentioned no traces of a disintegration of semen are ever found, appears to be very much opposed to such a supposition. At the same time, however, it is perhaps unquestionable that, without seminal evacuation, a formation of semen may be possible; for it is sufficiently established

that a rich heating diet and an *unsatisfied sexual excitement often produce a turgescence of these organs, attended* with painful sensations, and most probably with the formation of semen. The subsequent removal of this fulness does not, however, appear to me incontestably to prove any absorption, because a difference in the quantity of blood in the testes, and the passing of the semen into the *vasa deferentia*, are sufficient to account for the restoration of the usual condition."

In some able papers by Dr Hake of Brighton, in the "Lancet" for 1835, on Absorption, he gives his opinion of the subject at issue, in the following words:—"Semen and other secretions belonging to an open cavity are no more reabsorbed than bile, and the healthy action supposed to be induced in the system from continence, besides other causes, results from a metastasis of the action of the stimulus to the other organs, which invigorates them to a degree equal to that which the presence of the fluid itself could effect."

The effects of castration on animals, and the difference in point of vigour between the castrated and non-castrated animals, have also been adduced as in favour of seminal reabsorption, and Mr Acton refers to this subject in the following paradoxical argument:—"The vigour of the uncastrated animal must depend on the testicles secreting semen, that is, *taking its elements from the blood* [*italics mine*]. This semen is slowly secreted by the testes, and passes slowly along the *vasa deferentia* towards their termination, which are dilated, and some passes into the *vesiculæ seminales* there, and along the course of the *vasa deferentia*

absorption probably takes place, if at all." The *reductio ad absurdum* has its usual relation to this argument. The effect of castration on the system is due to the non-removal of the elements of semen; the vigour of an uncastrated animal depends on the testes taking the elements of semen from the blood; consequently in a direct ratio to the amount of semen removed, so will be the vigour of the animal; and the further conclusion must be equally incontestable, that the reabsorption of that *which imparts vigour by being removed, ought rather to have an injurious than a beneficial effect!*

Human observation and experience in all ages have confirmed and observed the debilitating effects produced by excessive sexual indulgence, or preternatural excitation of the genital organs. Under the name of ΦΘΙΣΙΣ ΝΟΤΙΑΣ,\* or "Humid Tabes," the effects of sexual indulgence are described by Hippocrates as a disease of the spinal marrow, and incident to newly married people. The observations of Hippocrates are to the following effect:—"It attacks principally the newly married, and persons addicted to venereal pleasures; they are without fever, have a good appetite, and become lean. If you interrogate them, they respond that they have the feeling as if ants descended from the head along the spine; after micturition or defacætion they pass abundant watery seminal fluid; they do not beget children; they have nocturnal pollutions, whether sleeping or not with females."

Pickford observes:—"The semen once deposited in the *vesiculæ seminales* is destined for evacuation, and nothing can be more fallacious than to suppose that

\* Περὶ τῶν Ἰνθῶς Παθῶν and Περὶ Νουσῶν.



the reabsorption of the semen into the organism can do any good, or produce any increase of bodily strength and spirit."

Again, if the power of the voice and growth of the beard depend on seminal reabsorption, it is not narrated that in cases where castration has been performed, in cases of occlusion of the vas deferens, or induration of the epididymis, that any such influence had been thus manifested. Indeed, in Sir Astley Cooper's case the patient "was in the habit of shaving once and sometimes twice a week." Twenty-eight years after the operation his voice, naturally feeble, remained as at the time of the operation.

I have been charged by the reviewer of the former edition of this work, in the "Lancet," with having assumed the non-absorption of semen on insufficient evidence. I am still unshaken in my opinion. I regard the *vesiculæ seminales* as fulfilling like purposes to the gall-bladder and urinary bladder in relation to their special contents; and while it is not denied that bile and urine are capable of reabsorption, it is contended that this is not normal. Further, analogy is opposed to the view. The reabsorption of the corresponding secretion of the female, viz., the menstrual fluid with its contained ovum or ova, is not regarded as normal. Where would reabsorption take place? Has the presence of absorbents ever been traced to the *vas deferens* or *vesiculæ seminales*? There is then not the slightest evidence that reabsorption of semen takes place, while, on the other hand, sufficient grounds exist to justify a contrary belief. By one class of individuals—Charlatans—this theory is propounded for the purpose of terrorism; by another, a well-meaning class,

perhaps, in order to reconcile physiology with conventional ethics.

That there is a difference between castrated and non-castrated animals we are not prepared to deny; the cause we are disposed to ascribe first, possibly to the shock, and secondly, to the removal of organs so intimately associated with the medulla oblongata; thus disturbing by their removal a co-ordinating pole of nervous equilibrium, and diminishing muscular vigour by some impression on the medulla oblongata.

The influence of the cerebellum on the nutrition and vigour of the body is indisputable, and the intimate relationship between the sexual organs and this portion of the nervous system is equally incontestable. This is well indicated by the following observations. Budge remarks:—"By a lucky coincidence I made the gratifying observation that in an old cat, whose testicles lay in the abdominal cavity, those organs, immediately after death, moved, whenever the cerebellum was irritated by the scapel or with caustic potash. The effect was such, that whenever the right lobe of the cerebellum, and the right half of the vermiform process were irritated, movement of the left testes ensued, and the reverse. Mere superficial irritation sufficed to produce the result. The movement of the testicles soon became so palpable in the animal that there could be no doubt as to its reality. I hastened to open the entire skull, and the abdominal cavity, and found the testicles lying perfectly still, without any trace of movement. On irritating one side of the cerebellum the testicle of the opposite side swelled, quitted its position, and rose up so as to form a right angle with the spermatic cord, one side of the angle

being directed forwards. If I desisted from the irritation the testicle returned to its position, and the movement was renewed on renewing the irritation. The experiment was repeated during half an hour with unvarying results. . . . In the ductus deferens the movements were alternately those of elevation and depression, an entire portion being distended and collapsing," &c. &c.

Roubaud affirms that he has frequently allayed obstinate priapism by the application of cold to the nape of the neck; and M. Serres has remarked in a series of cases, that an effusion of blood on the cerebellum is accompanied with a turgescence of the genitals, sometimes attended with seminal discharge, and persisting even after death. Burdach\* maintains that uterine ulcerations occasion pains in the occiput, and spasm in the cervical region.

Larrey records the following interesting case bearing on the subject. A soldier wounded in the occipital region was attacked with all the symptoms of inflamed cerebellum, which, despite treatment, were dissipated only on the appearance of an abscess which opened spontaneously on the nape of the neck. Three months afterwards he rejoined his regiment, and many years elapsed before he again came under Larrey's notice. His appearance was then so altered that Larrey mistook him for a young conscript exhausted by some asthenic disease. He was thirty-two years of age, of middle size, but thin and pale; his eyes were depressed, his lips blanched, his hair, more especially that which covered his occiput, was thin and bristled, and a feeling of pain and coldness was always felt in the back

\* Bau und Leben des Gehirns, t. iii. p. 75.

portion of his head. Being beardless, and possessing a feminine voice, a suspicion of his sex arose among his comrades, and an examination disclosed the following condition:—"To our great surprise," says Larrey, "we found his genital organs reduced to the size of those of an infant some months old. His penis was not more than five or six lines long, and two or three lines thick; it never exhibited any degree of erection; and his testicles were so wasted as scarcely to equal in size a small bean."\*

Lallemand refers to the case of a man who received in the neck a sabre-cut, in consequence of which the testicles atrophied, and venereal desires diminished. He also cites another case in which the discovery, that a stroke on a particular part of the occiput produced voluptuous sensations, was followed by repeated percussion on the same part to produce similar effects.

M. Chauffard mentions the case of a man of eighty-three years of age, in whom a blow on the nape of the neck produced violent satyriasis. It is not at all unfrequent to encounter men in whom sexual intercourse is followed by pain in the nape of the neck, and sometimes even during the act.

So far, then, we have adduced reasons for the following opinions:—that the secretion of semen is constant in health, its quantity and rapidity of secretion being subject to certain mental states; that while spermatozoa may be found in the epididymis and vas deferens, the vesiculæ seminales act as seminal reservoirs; that independently of the testicular secretion, fluid may be extruded from the vesiculæ, prostate, and Cowper's glands conjointly, and probably singly; that the pre-

\* Clinique Chirurgicale, 1830.

sence of spermatozoa in a fluid from the urethra gives only an affirmative proof that such fluid is seminal, for their absence does not prove that the fluid is *not* seminal, that semen is not discharged in health with the urine, and that seminal fluid is not reabsorbed. We may be supposed to have landed ourselves on the horns of a dilemma, inasmuch as the only means remaining for the disposal of semen is that of seminal emission. To this conclusion the facts we have submitted force us; but we must qualify this belief by asserting our conviction that a power of accommodation is inherent in the organism, so far as all the secretions are concerned; for the quantity of all secretions is relative to the requirements, and glands are stimulated to increased secretion, each by its own special stimulus. Thus, saliva is secreted in greatest abundance during mastication, and the gastric and biliary secretions are in like manner more abundantly secreted during digestion; and hence, in the case of the seminal secretion, where a mechanical imperfection seems to some to exist, a regulating influence of the nervous system meets the supposed want. Therefore semen, it would appear, is secreted but very slowly when the vasa deferentia and vesiculæ seminales *are full*, but no sooner are they emptied than the testicles and associated organs supply the want created, for it seems to be the normal condition of the vasa deferentia and the vesiculæ to be full, thus enabling human beings, in contradistinction to animals, to have sexual congress at any time. But should physical or psychical causes determine secretory stimulation, the *vis a tergo*, in continent individuals, occasions involuntary seminal emission, an occurrence in healthy individuals under

these circumstances, between the period of puberty and the advanced age of even sixty, as my experience has shown, inseparable from our present organisation. Hence I contend that seminal emissions, in continent individuals within given limits, are rather significant of health, and that their absence under these circumstances would be calculated more to surprise than their presence to excite alarm. While it is in perfect harmony with sound physiology to infer that somatic or psychical irritation determines an increased glandular secretion, it would seem equally *unreasonable* to infer that the secretion of any glandular body is exclusively under the influence of physical or emotion causes; accordingly, while preternatural secretion may be induced on the one hand, there must, on the other, be such a condition as independent normal secretion; and to the extent that involuntary seminal emissions are due to this *vis a tergo* from normal secretion, the idea of treating them as manifestations of disease, I look upon as too absurd to merit grave attention.

Reverting more particularly to our subject, it is not contended that, while involuntary seminal emission within certain limits, and under the circumstances referred to, must be looked upon as normal, *that exaggerated seminal emission may not constitute a pathological condition demanding the attention of the physician or surgeon.* To draw the line of demarcation in these cases requires the exercise of sound judgment, uninfluenced necessarily by preconceived prejudice, and a consideration of the general symptoms which a given case may be present; for obviously much will depend on the natural vigour of the patient, and therefore a robust person will tolerate with impunity a

drain upon the system from which a weaker one might suffer dangerous consequences. As we have seen that secretion of semen may be stimulated by psychical or somatic causes, we proceed to inquire the nature and variety of these causes. On the psychical side, that occurring during the transition from adolescence to mankind, is peculiarly striking and dominant. At the period of puberty the bodily and mental functions attain their complete development,—the development of the former coinciding with a normal excitation of the latter.

On the physical side, the voice becomes abruptly changed;\* it is fuller, deeper, and more sonorous, the sexual organs become fully developed, and incipient beard makes its appearance, along with growth of hair on other parts of the body; psychically, with the increased cerebral development corresponding mental emotions manifest themselves. As Feuchtersleben remarks,—“The mind of the young man is powerfully impelled in the direction of the will, that of the maiden

\* “Le véritable épanouissement de la période morale s'opère surtout à la puberté. L'instinct sexuel apparaît et il domine l'être comme un tyran. L'homme devient vraiment homme, la femme vraiment femme. Chez l'un et l'autre, l'impressionnabilité morale acquiert une sensibilité exquise. De fortes impressions morales, fréquemment répétées, provoquent la génération des désirs durables, on est apte à la passion. Alors, du moins chez l'être normalement doué, les besoins nutritifs et sensitifs sont complètement primés par les besoins moraux. Amour sexuel passionné, amour mystique, non moins fort, dévouement désintéressé, pour l'être aimé réel ou fictif, splendeurs de l'imagination, ivresses ou tortures des émotions morales, nous vous avons tous connus; mais peu à peu, chez certains hommes du moins, chez ceux qui parcourent le cycle complet, vous devenez moins vivaces, moins impérieux, vous cédez la place au désir de la fortune, à l'ambition chez beaucoup, chez quelques-uns que je considère les échantillons les plus complets de l'espèce, à l'amour du travail intellectuel quel que soit son but, sciences proprement dites, études sociologiques ou morales.”—Letourneau, *Physiologie des Passions*, 1868.

in the direction of feeling; images of undefined delight float before their minds; the enchantress Fancy reigns in all her loveliness; soothing and rapturous emotions alternate in a constant tumult of ecstasy; and love as a passion, with flattering but despotic hand—fortunate those who are able calmly to guide it—seizes the sceptre. When happily controlled, whether designedly, through education and self-reflection, or undesignedly, by an harmonious proportion of the desires in the natural disposition, love becomes the source of the most beautiful psychical developments; and he who never loved is or will become egotistical, mean, narrow-minded, covetous, timid, and but too often an unnatural sensualist.”

The new want, says Cabanis,\* produces in the young man a mixture of audacity and timidity,—of audacity, because he knows that all his organs are animated with an unknown vigour; of timidity, because the nature of his desires astonish him, as defiance to them disconcerts him. In the young girl this want gives rise to a sentiment of modesty or virgin shame, of which she was heretofore ignorant, which may be regarded as the hidden expression of her desires, or the involuntary signs of her secret impressions.

The period of puberty is thus a highly critical one, and amid the phantasmagoria which take possession of the mind, man's relation to the opposite sex occupies a prominent place. If, accordingly, there happen at this period, in the normal state, this mental condition, can it be a matter of surprise if it manifest itself in corresponding physiological aberrations? Hence we infer that involuntary seminal emission at puberty

\* Rapport du Physique et Moral de l'Homme.



ought to be considered normal to an extent that would not so obtain in the latter periods of life.

This mental state is too often exaggerated by the mistaken mystery in which sexual matters are generally enveloped. Obscene passages in the classics and other books are greedily searched for by boys, the poison sweetened by stealth is eagerly devoured, and forms, in many cases, to deplorable extents, the intellectual food of early manhood. That an opposite course would have a better effect, the fact that even the worship of Phallus among the Egyptians never conveyed any impure thought, or lascivious reflection, strongly enough indicates.

It is, therefore, remarked by Mason Good, that "in the case of young men, when entering upon or emerging from pubescence, and of the relaxed and delicate frame just noticed, nothing is more common than involuntarily erection and seminal emission during sleep, often connected with a train of amorous ideas excited by the local stimulus." Dr Good refers the amorous train of the imagination, it will be remarked, to peripheral irritation. We have endeavoured to show in the foregoing, that while local irritation may, on the one hand, be sufficient to account for this mental perversion, in other cases it is purely psychical; but to this part of our subject we shall return more fully in the sequel. "It is hence not difficult," remarks this distinguished author, "to conceive that members so irritable as the sexual organs, when once the imagination leads energetically to the subject of concupiscence, should occasionally participate in the vision." "In some morbid states of the body, and especially when accompanied with local irritation, produced by inflam-

mation, fibrous entony, the debility of old age, or a habit of vicious indulgence, a seminal flux has sometimes taken place without any connection with the dream, and sometimes without either erection or turgescence; but this does not constitute the affection immediately before us, in which the stimulant power lies in the sensory (*sensorium* ?), and is propagated from that organ to those of generation.”\*

It is clear, from the latter quotation, that in this case Dr Good refers to a disturbance, as we term it, of the psychical balance. The same thing occurs, as we have seen, in cases of infantile enuresis, and the subject did not escape the philosophical penetration of Lucretius, the Roman poet, as the following extract testifies :—†

“ Multi mortem obeunt; multi de montibus altis  
 Ut qui præcipitent ad terram corpore toto,  
 Externantur et ex somno quasi mentibus capti  
 Vix ad se redeunt permoti corporis æstu.  
 Flumen item sitiens aut fontem propter amœnum  
 Adsidet et totum prope faucibus occupat amnem.  
 Pueri sæpe, lacun propter seu dolia curta,  
 Somno devinctei, credent se extollere vestem;  
 Totius humorem saccatum corporis fundunt;  
 Quam Babylonica,‡ magnifico splendore, rigantur.  
 Tum, quibus ætatis freta primitus insinuantur,

\* Illustrative of the effects of a strong mental impression on the functions of the body, the following case may be mentioned :—Mrs T. consulted me, Nov. 1st, 1871, as to indifferent health. Nine months ago she was confined. The day after her confinement, her own medical man injudiciously communicated to her some information which made a strong impression of fear on her mind. The discharge at once ceased, and did not again recur during convalescence, and sometime afterwards numerous boils appeared on her legs and lower part of the body.

† Lucretius de Re Natura, iv. 1020.

‡ *Vide* Ovid's *Heroides*, Epistle of Cænone to Paris.

*Semen ubi ipsa dies membris natura creavit,  
 Conveniunt simulacra foris e corpore quoque,  
 Nuntiaæ præclari vultus, pulchrique coloris,  
 Qui ciet irritans loca turgida semine multo,  
 Ut, quasi transactis sæpe omnibus rebus, profundant.  
 Fluminis ingenteis fluctus vestem que cruentent."* \*

Pichon† narrates that a female of 48, who had ceased to menstruate four years previously, in assisting at a protracted and painful accouchement of one of her sisters, was taken with pains resembling those of labour; that some hours afterwards hæmorrhage from the genitals occurred, which lasted for several days, and that three days after the cessation of that discharge, the breast became tumefied, and furnished a secretion of milk.

It is a legitimate and interesting subject of speculation, whether it is the genital functional commotion, or in pathological conditions, the irritation which, acting on the brain, determines the dream, and in consequence the reflex action; or whether the dream is primary, and the functional impulse secondary. In nocturnal enuresis the physiological sequence is of the first order; in

\* Many meet death; many, as if tumbling down from high precipices to the ground with their whole body, are scared with terror, and, after sleep, as if they were out of their judgment, scarce come to themselves again, quite disordered by their body's turmoil. Again, a thirsty man sits down beside a river, or a pleasant spring, and gulphs down well-nigh all the stream. Cleanly people often, when asleep, believing that they are lifting their dress beside a urinal or the public vessels, pour forth the filtered fluid of their whole body, and the Babylonian coverlets of surpassing brilliancy are drenched. Then, too, those into the boiling current of whose age seed is for the first time passing, when the ripe fulness of days has produced it in their limbs, idols encounter from without from what body soever, harbingers of a glorious face and a beautiful bloom, which stir and excite the appropriate portions of the frame, and often occasion fruitless anticipations of the pleasures of love.

† Arch. General. de Med., t. xvii. p. 125.

seminal incontinence, I believe it to be sometimes of the one, and at other times of the opposite variety. During sleep the influence of the sympathetic over the organic functions seems to be diminished; hence the frequency of erections in this state; motor influence predominates. I believe it to be the reverse in respect of the brain, and that an anæmic condition is thus determined, which, in proportion to its degree, induces sleep. We have seen that a most intimate nervous connection exists between the cerebellum and the genital organs. Functional activity of the latter determines passive congestion—an increased afflux of blood—in the former. Genital, and even gastric irritation, during sleep will accomplish the same, and the disturbance of the circulation thus induce dreams corresponding to the seat of irritation, and to the relative point in the brain. On the other hand, ungratified sexual excitement may leave impressions on the brain, which during sleep, when the regulating power of the sympathetic is lowered, will be expressed in correlative functional action.

What is normal, then, both psychically and physically, may lapse into that which is abnormal, and while at puberty and the change of life (in females) there is a proneness to mental aberration, physical infirmities, as associated with and arising from sexual excesses, have been recognised by the earliest cultivators of medical science.

*Certain other circumstances which influence the Development of the Reproductive Faculty.*—Irrespective of puberty and age, certain individual peculiarities or idiosyncrasies exercise a direct influence over the generative faculty. Those inherent to the individual

may be regarded as constitution, temperament, passions, habit, regimen, modes of life; those extrinsically operative, climate, seasons, periods of life.

*Constitution—Temperament.*—The terms constitution and temperament are frequently and improperly used synonymously; by the former is to be understood the general relative development of all the organs; by the latter, a preponderance of the influence of a given portion of the organism over all the rest. In proportion as the constitution is robust, so will be the energy of the generative function, the earlier will be its development, and the greater the chances of a healthy progeny. With respect to persons of delicate constitution, in whom desire is frequently urgent, the copulative act is performed with less vigour, it might almost be said perfunctorily, but is not frequently followed by conception. By temperament is understood a given combination of psychical and physiological manifestations, usually distinguished by peculiarity of exterior habit. The ancients recognised four temperaments—viz., the *bilious* or *choleric*, the *sanguine*, the *melancholic*, and the *phlegmatic*. It is seldom that there is a marked predominance of the one in any given person; more frequently a twofold or treble combination exists. The lymphatic temperament is marked by a relaxed condition of body, and is not favourable to procreative vigour. The bilious temperament, on the other, is characterised by exactly opposite manifestations, sexual ardour, and procreative energy. “The temperament is so hot and so amorous that even with saintly virtues, nature gives a constant proneness towards the opposite sex. One might as well extinguish a great fire with a drop of water, or compel a large river to return

towards its source, as to correct the inclinations of that person.”\*

*Moral Faculties — Passions.*—To a greater extent than any other of the bodily functions, that of generation is influenced by the moral. The more lively the imagination, the more directly is the influence over the genital sense, while mental torpor produces the opposite effect. Intellectual application of a protracted nature, on the other hand, diminishes sexual vigour, and may even cause impotency and sterility.†

The sentiment of love exercises, perhaps of all others, the most powerful influence over the generative function, heightening its power and activity, while its opposite, that of repulsion, strikes it with diminished vigour, or even impotency.

Exceptional circumstances, though they do exist, but prove the rule. Thus, when ardent desire has been long repressed, or if it exceed the normal limit, a like influence may be induced over the generative function as that caused by a feeling of repulsion. The excess of desire may cause temporary impotency, and in order that the natural consensus between body and mind and its attendant physiological manifestations be developed, the normal sur-excitation must have ceased, or at least returned to its proper standard. Montaigne accordingly remarks, “J’en sais, que j’aurai plus d’une fois occasion de citer à qu’il il a servi d’y apporter le corps même, demi-rassasie, d’ailleurs, pour endormir l’ardeur de cette fureur, et qui, par l’age, se trouve moins impuissant de ce qu’il est moins puissant.”‡

\* Venette, *Tableau de l’amour conjugal*, 2<sup>e</sup> partie, chap. iv. art. 1<sup>er</sup>.

† *Physiologie et hygiène des hommes livrés aux travaux de l’esprit*, par le Docteur Reveillé-Parise. Paris, 1843.

‡ *Essais*, t. i. p. 104. Paris, 1743.

*Habit.*—As in other portions of the body, as we shall see in the sequel, habit exercises a strong influence over the faculty of generation. Exercise of the genital function is not attended with the same consequences in all persons. In some it engenders satiety, and is conducive to sexual vigour; in others the want of normal excitation is followed by impotence. Modes of life, as they react on the system generally, will react correspondingly on the sexual functions.

*Climatic Influences.*—In hot climates, both in the male and female, the sexual functions and capacity are developed at a much earlier period than in cold.

Montesquieu ascribes to this fact the polygamy of these countries. “Females,” he remarks, “are marriageable in hot climates at eight, nine, and ten years of age; thus infancy and marriage are almost coincident; they are old at twenty years. Reason never exists with them coincidently with beauty. When beauty demands the empire of reason, reason refuses it; when reason is able to obtain it, there is no beauty. Females become dependent, for reason is not able to procure them in age a supremacy which beauty has not given them in youth. It is thus apparent that while religion interposes no obstacle, the husband quits his wife, takes another, and polygamy is introduced.”\*

The opinion of Montesquieu is warmly contested by Chervin,<sup>†</sup> who shows that in hot climates puberty is equally early among males as among females, and that in such climates, as in the Levant, nothing is more common than to find impotency in men of thirty, and

\* *Esprit des lois*, 1764, liv. xvi. chap. ii.

† *Recherches Médico—Philosophiques sur les Causes Physiques de la Polygamie dans les pays chauds.* Paris, 1812.

who frequently demand of Europeans *Madjoun*, or aphrodisiac pills.\*

*Seasons.*—Considering what obtains in hot countries, it might naturally be inferred that the procreative faculty is more active during hot than cold weather. This, however, is not the case; for as the rut in animals has been compared with certain phenomena in the human species, so is the generative function more active in spring than in summer. The investigations of M. Villermé,† in France, and of MM. Quetelet‡ and Smits, in Belgium, have placed this fact on a scientific basis.

The former has made the following classification of the months of the year in the order of fecundity:—

May.	February.	August.
June.	March and	November.
April.	December.	September.
July.	January.	October.

Addressing himself to the question, whether the periodic influence was confined to fecundity or extended in like manner to desire, M. Villermé, by investigating the records of justice, found that while in spring there was a greater number of conceptions, there were likewise at this period the greatest number of criminal assaults and rape. This influence is not confined to temperate climates, but is universal; and man may be said, like animals, to a certain extent to have a rutting season. But even as the phenomena of rut cease when wild animals live a domestic life, so in the human being, no doubt owing to artificial modes of life, is the influence referred to less marked in cities than in the country.

\* *Histoire Medicale de l'armée d'Orient*. Paris, 1802.

† *Annales d'hygiène*, t. viii. p. 459. Paris, 1832.

‡ *Ibid*, t. ix. p. 308. Paris, 1833.



*Excessive Seminal Emission, a Pathological State—Symptoms.*—Few medical subjects have suffered more from too hasty and unjustifiable generalisation than the one under consideration. This is well evinced in the writings of Dalmas, Albers, Faye, Lallemand and his followers. On the other hand, the very existence of seminal incontinence as a pathological condition has been more than once disputed by men whose position and reputation entitled them to consideration. As in most other cases, the truth will be found here also, we believe, between the two extremes. The manifestations of preternatural seminal emission are pathologically divisible into (a) constitutional, (b) local. The question will engage our attention in the sequel, whether the symptoms arising from excessive coitus are analogous to those caused by preternatural excitement of the genitals.

The prominent feature in the first order of symptoms is general enfeeblement of health. Patient has frequently a sallow look; pulse soft and feeble, with clammy skin. The intimate physiological relation of the genitals with the brain and nervous system develops unquestionably symptoms relating to the latter, which, taken in conjunction with the symptoms of enfeebled health, rivet the attention of the experienced physician, and point too frequently to an accurate diagnosis. Of the latter are evident depression, or melancholy, sometimes restlessness, trembling, at first confined to particular parts of the body, but ultimately becoming general. Manifest disorders of digestion frequently exist; the tongue is coated, the bowels confined, flatulency and hæmorrhoids are often complained of. There is not unfrequently a marked dilatation of the pupils, the

eyelids being surrounded by a dark ring. Emaciation in certain cases becomes extreme; muscular activity and power are impaired. A form of anæsthesia, comparable to that noticed in hypochondriacal and hysterical patients, is often noted. Transitory sensations of heat, burning, or cold, are complained of. The sense of hearing is perverted; it loses its delicacy and precision; singing noises exist, which may proceed to complete deafness.

Memory is often impaired, and there exists an inability to fix the attention for any length of time on a given subject. Added to these, there are functional derangements of the heart's action, as manifested in palpitation, shortness of breath, giddiness, &c. In other cases, respirations are slow, few in number, and not deep. In extreme cases epilepsy may be induced, and complete impotency.

Dr Barclay, whom no one can accuse of exaggeration, and who justly reprehends the "obscene familiarities," in which some writers on this subject have indulged, observes—"Painful as the inquiry must be to every right-feeling man, we must not neglect the suggestions of the wan aspect, and the shrinking eye of the young man, who has brought upon himself, as the fruit of his vices, the penalty of a constant spermatorrhœa."

Scarpa remarks, and in this he is confirmed by Rognetta, that masturbation is a frequent cause of amaurosis. The prognosis he considers highly unfavourable, as in all other cases which have been preceded by great and protracted incitement of the whole nervous system.

As to the frequency of involuntary emission neces-

sary to constitute a disease, it will be obvious that no general rule can be laid down. Every case must be taken on its own merits, for seminal emission may be normal in one, to an extent that it would be abnormal in another. I regard the statement made by certain authors,\* that more than one seminal emission in a month, in continent persons, constitute spermatorrhœa, as decidedly extravagant.

On the other hand, it is remarked by Pickford that, should involuntary emissions occur more frequently than once a week, they certainly demand attention, not because the quantity of semen emitted can of itself do any harm to an otherwise healthy young man, but because such frequency indicates an abnormally excitable condition of the generative organs.

Trousseau,† referring to the same subject, remarks that in chaste persons involuntary emissions take place less frequently than is generally supposed, and that a very vigorous man may abstain for months from sexual intercourse, without having nocturnal pollutions, and that, speaking generally, they ought to be of rare occurrence, save during early manhood. "Should they take place," he further remarks, "every month, still more, should they occur every fortnight, or every week, should the loss of semen happen in this way, even less frequently than in those who resort in moderation to coitus, there will nevertheless be some bad effect produced."

From the intimate connection, with regard to nervous supply, subsisting between the spine and the genital organs, it will be as apparent, as it is indisputable, that preternatural sexual stimulation frequently operates as

\* Mr Milton on Spermatorrhœa.

† Clinical Medicine.

a powerful cause in the production of *tabes dorsalis*, and progressive locomotor ataxy (*a priv. ταξις*, order). In addition to the observation of Hippocrates, already referred to (page 79), Celsus is no less explicit on this point. He remarks, “*Est etiam, circa naturalia vitium, quod sine venere, sine nocturnis imaginibus sic fertur, ut interposito spatio, tabe hominen consumat.*”\*

I have observed, conformably with the physiological relationship already referred to, that preternatural sexual excitation is frequently associated with a dull aching pain, or feeling of weakness over the lower portion of the spinal column.

Dr Bradbury of Cambridge records (*Brit. Med. Journal*, Oct. 28th, 1871) a case of locomotor ataxy, due, evidently, to excessive onanism, of which the following is an outline:—A young man of eighteen was admitted into Addenbroke’s hospital, suffering from the following condition:—Three years prior to May 1871, he first complained of pain and weakness in the small of the back, which became aggravated by cold. Nine months ago he began to lose control over his legs; when he walked he staggered as if intoxicated—his legs were thrown out at random, and he brought his heels heavily to the ground. He could not walk when his eyes were closed without falling on the floor, and he fell to the ground when he stood upright, blindfolded, with his feet together. The conjunctivæ were injected, but the eyes were otherwise natural. He was deaf in the left ear. He complained of frontal and occipital headache, with vertigo. Sensation was not impaired, and the muscles of his legs were not wasted. When first admitted there was

\* *De Medicina*, lib. iv. sec. 21.

some slight loss of power in the left arm, which eventually passed away. Pains of short duration shot down the legs. There was no loss of control over the sphincters, except occasional dribbling of urine. He confessed to having practised masturbation to a great extent since the age of nine years, and at this time he was troubled with spermatorrhœa. A brother who came to see him had a peculiar gait, and Dr Bradbury was of opinion that, while the exciting cause was excessive onanism, there was an hereditary predisposition to this neurosis in the family. This is only the fourth case of locomotor ataxy published as occurring under the age of twenty.

On the other hand, locomotor-ataxy reacts on the genito-urinary organs. These effects consist of frequent micturition, attended with pain; and Trousseau has much insisted on the occurrence of satyriasis, as manifested in frequent imperfect erections, with premature ejaculation of semen. Similar phenomena have been observed in the female by Bouchard and Bourneville. In the rectum lancinating pains are felt; and painful spasm is not unfrequently superinduced.

Of the local symptoms of spermorrhagia may be mentioned discharge of true seminal fluid at stool, or with the urine, varicocele, and impotency.

We pass now to investigate the *immediate effects of preternatural sexual excitation*.

In treating of the physiology of normal function we have seen that impressions on the sympathetic determined hyperæmia and increased glandular secretion, and that the same thing is occasioned reflexly through the sensory nerves. A distinction was thus established between psychical and somatic excitation. Should the

exciting cause be of too long duration, or too intense, preternatural secretion is the result, in conformity with the law, *ubi stimulus ibi humerorum uberior adfluxus*; and the converse law is equally true,\* *ubi adfluxus ibi*

\* The intimate connection existing between spinal complaints and the function of the testicles is illustrated in the subjoined case, which occurred in the practice of the late Mr Solly. The subject of it (*vide* Mr Solly's Surgical Experiences) was a fine young man, about 23 years of age. About two years and a half previous to his consulting Mr Solly, he fell from a height of sixteen or seventeen feet with his back flat on a hard gravel walk. He was stunned at the time, though he did not strike his head directly. He received immediately the best advice; was bled from the arm, and leeches over the hip. He was very sore, and had severe headaches for some days afterwards, and was not able to walk until seven or eight weeks had elapsed from the time of the injury. He was then examined by several medical men, and pronounced sound. After this he went abroad, and lived rather freely. Just ten months before consulting Mr Solly he began to suffer from involuntary seminal emissions, accompanied with great feeling of weakness in the back. About two months after these first appeared he remembers finding a swelling on the left side of the loins, but this inconvenienced him so little that he did not even mention it to his medical attendant, who treated him for dyspepsia, ordering him plenty of horse and pedestrian exercise, with tonics; but he continued to get worse, and was obliged to return to England. On his arrival he applied to an eminent surgeon, who treated him for spermatorrhœa with the caustic catheter. He remained under his treatment for two months, but without improvement, when Mr Solly was consulted. As the result of this gentleman's examination, he concluded that the spermatorrhœa had a spinal, and not a generative origin. On stripping patient, an elastic, elongated swelling, about four inches in length, was found on the left side of the lumbar vertebræ. On rapping the spine in this region, patient felt a thrilling pain shooting down his legs, with some numbness. Walking, riding, &c., caused the same pain. Weakness complained of in both legs, more especially right. He dragged this leg in walking, and could not balance himself naturally. Countenance anxious, and he looked out of health. The nocturnal emissions occurred frequently, without erection or pleasurable sensations. Spermatozoa in urine.

Putting the facts of the case together, Mr Solly inferred that the spine had been injured about two and a half years previously. At first he feared there was an abscess, but hoped the case was not so serious, as pressure and rapping on the spine were so well borne. He had no doubt, however, as to there being chronic inflammation of the ligaments of the vertebræ and theca vertebralis. With a view to this state he ordered complete rest, a large moxa to be made over the swelling, and quinine with sulphate of magnesia. Subsequently,

*irritatio*. Hence genital irritation, preternaturally intense or prolonged, occasions urethritis, inflammation of the prostate, inflammation of the vas deferens, chronic phlegmasia of the testicle, inflammation of the vesiculæ seminales, varicocele or circocoele (κίρκος, a ring, κηλη, a tumour), hæmorrhoids, &c. These conditions, again, react on the seminal secretion, rendering it more abundant, and its evacuation more frequent.

Urethritis from this cause presents the same features as that arising from specific contagion. On August 14th, 1873, I was consulted regarding a case of this nature. I find from my notes that patient had not had connection with a female for more than a year. There was a purulent discharge from the urethra in all respects like a gonorrhœal discharge. Seminal emissions took place to the extent of two a night, twice or thrice weekly. Patient was in the habit of resorting to masturbation, which within but a week or two previously he had abandoned. On passing an instrument there was considerable tenderness throughout the greater portion of the urethra. The discharge was obstinate, and was not completely removed when the patient passed from under my notice.\* Civiale has

this medicine was changed to carb. ferri with pil. aloes c. myrrh. Six weeks afterwards the result is thus detailed:—

“V. T. is going on as favourably as when you saw him. The issue discharges well. He has not any numbness on tapping the spine, nor any disagreeable sensation. He has had several emissions, but they have been attended with natural feelings, and have not left him in the weak, nervous state as when they occurred some months ago,” &c.

The above bears date 22d October 1852. On 4th December, “The swelling has been entirely absorbed, and on both sides the loins are exactly the same size and shape. The nocturnal emissions have ceased; the urine is free from spermatozoa.”

\* A similar case is reported in *The Lancet*, vol. ii., 1839–40.

noticed a similar occurrence. He observes that the practitioner ought not to overlook the fact, that in men who have never had connection, and who are not in any way exposed to contagion, masturbation, independently of its ordinary consequences, provokes a blenorrhagic discharge.

In a large number of cases in which sexual excesses have been practised, chronic inflammation of the prostate is found. The prominent symptoms of this state are unmistakeably elicited on passing a bougie or catheter, which on passing over the prostatic surface occasions pain, sometimes so acute as to cause syncope. Over the prostate, in the perineum, tenderness on pressure is elicited. There is frequent tenesmus; frequency of micturition, with more or less pain, reaching its maximum intensity as the last few drops of urine are expelled. Involuntary seminal evacuations are frequent, attended with deep-seated pain. The same happens on coitus being resorted to; the pain, the malaise, and anxiety thereby occasioned sometimes remaining for days. Sometimes a discharge of fluid both from the prostate and vesiculæ seminales takes place, under those circumstances, even without erection. Should the prostate be in a state of enlargement, the superficial veins of the penis may be remarked as being full, and the organ more or less enlarged in consequence.

As in the case of urethritis, prostatic hyperæsthesia in certain cases induces coarctation of the urethra independently of gonorrhœa, as exemplified in the following case which recently came under my notice:—A young gentleman, for a year prior to consulting me, confessed to practising masturbation. His passions,



he alleged, had been first excited by reading Boccacio's Decameron. He had been engaged to be married within a month of the time I had seen him first, and fearing sexual incapacity, he consulted me. On passing an ordinary-sized bougie great tenderness and narrowing of the canal were discovered in the prostatic region. Bougies were passed within given periods, alkalies and sedatives prescribed, and in a fortnight afterwards a number *ten* could be passed without the slightest difficulty or the production of pain. Patient never had gonorrhoea; he married at the appointed time. His health and spirits have continued excellent.

A similar case came under the notice of my friend J. B. Hislop, Esq., F.R.C.S. (of Glasgow). A young gentleman who consulted him regarding the occurrence of seminal emissions to such an extent as to affect his health, and consequently occasion mental annoyance. Mr Hislop advised marriage. His patient got married; his wife became pregnant; but still the emissions persisted. An examination of the urethra was thereupon instituted, when intense tenderness was found to exist in the back part of the urethra; so intolerant was the prostatic region of the passage of the catheter that considerable hæmorrhage ensued. Patient acknowledged an indulgence, for a short time, in the practice of masturbation, in which he was initiated by no one, but, like Rousseau, ascribed the feelings which originally prompted to its performance to maternal chastisement administered *ad posteriorem*. "Qui croiroit que ce châtiment d'enfant, reçu à huit ans par les mains d'une fille de trente, a décidé de mes goûts, de mes désirs, de mes passions, de moi pour le reste de ma vie, et cela précisément dans le sens contraire à ce qui

devoit arriver naturellement? En même temps que mes sens furent allumés, mes désirs prirent si bien le change, que, bornes à ce que j'avais éprouvé, ils ne s'avisèrent point de chercher autre chose. Avec un sang brûlant de sensualité presque dès ma naissance, je me conservai pur de toute souillure jusqu'à l'âge où les tempéraments les plus froids et les plus tardifs se développent. Tourmenté long-temps, sans savoir de quoi, je dévorais d'un œil ardent les belles personnes, mon imagination me les rappeloit sans cesse, uniquement pour les mettre en œuvre à ma mode, et en faire autant de demoiselle Lamercier" (Rousseau, "Confessions," partie i. livre i. p. 1039).\*

The symptoms presented by sympathetic irritation of the testicle are mainly in a less degree similar to those arising from regular inflammation of the organ. The testicles are swollen, there is more or less dull deep-seated pain and general uneasiness; and a feeling of weight exists in connection with the organ. The diagnosis of affections of the vesiculæ seminales and vasa deferentia is more equivocal. By rectal examination tenderness or enlargement may be discovered, or a too precipitate ejaculation of semen may indicate

\* Who would believe that the chastisement of infancy, received at the age of eight by the hands of a woman of thirty, had given an impulse to my tastes, my desires, and my passions, for the rest of my life, and that in a sense contrary to that which ought to arrive naturally. At the same time that my senses were kindled, my desires appreciated so well the change, that, impelled to that which I had experienced, they did not oblige me to think of anything else. With my blood boiling with sensuality almost from my birth, I kept myself free from every stain to an age when the temperaments of the coldest and the most backward begin to develop themselves. Tormented long, without knowing why, I devoured with an ardent eye beautiful persons, my imagination recalled them to me without ceasing, only to figure them after my own fashion, and to make of them as much as of Madame Lamercier.

vesicular hyperæsthesia. In many cases pain following ejaculation, and general malaise remaining for days, indicate the condition in question.

Should inflammation occur in the testicle, it may result in atrophy of the organ. I am persuaded that I have seen atrophy of the testicles and penis, as the result of excessive seminal emission. Cases of epididymitis from masturbation have come under my personal notice.

Considerable prominence has been given to varicocele as one of the effects of masturbation, or excessive coitus. In the vast majority of cases where this condition is suspected, it has no actual existence. It is suggested to the mind by a perusal of those vile productions which the press of our country manifests such a desire to disseminate. Notwithstanding this, I am persuaded that in many cases varicocele does stand in the relation of effect, to excessive excitation of the genitals, and this is to be ascribed to exhaustion of the nervous centres; for, as we have seen, stimuli which are relatively too violent, may, by too frequent repetition, exhaust muscular tension. Hence the dilatation of the spermatic veins from debility of their muscular coat. The veins become enlarged, are valveless, and a remora is thus induced, which by retrogressive pressure obstructs the due supply of arterial blood, and consequently, after a time, shrinking of the testicle. That the shrinking of the organ is due to diminished supply of arterial blood is further demonstrated by the fact that obliteration of the affected veins, the circulation being thus accelerated, is usually followed by increased nutrition and healthy growth of the testicle. The pathology of this condition is exactly the same

as that which obtains in the case of varicose ulcers of the legs.

The left testicle, in health, suspends lower than the right; and while dread of varicocele is not unfrequently inspired by this normal condition, it is still true that the left testicle is more subject to varicocele than its opposite fellow. Why this should happen will be disclosed by an examination of the vascular distribution of the parts. The right spermatic vein opens by an acute angle into the vena cava, while the left opens almost at a right angle with the left renal vein, and discharges its contents almost at a right angle into the left renal vein. Hence the greater obstacle to the return of blood in the left spermatic vein is of a two-fold nature: it has to overcome a greater amount of force of gravitation as it empties itself into the venous system much higher than the right, and its insertion into the receiving vessel being at a right angle, a greater propelling force is required. Furthermore, the left spermatic vein passes behind the sigmoid flexure of the colon, a position in which it is liable to be pressed upon by fæcal accumulations, and a further obstacle to the circulation of its blood is thus created.

The diagnosis of varicocele is important. From hernia it may be thus distinguished:—Place the patient on the back, elevate and press the tumour, when, if a hernia, it suddenly disappears; then place the finger on the abdominal ring, let the patient resume the erect position, and, if varicocele, the tumour will reappear, a thing not possible with hernia under the same conditions. Again, the physical characteristics are so different as of themselves to prevent error.

The term circocoele (*κυρκος, κηλη*) more accurately

applies to this condition, that of varicocele implying in addition enlargement of the superficial veins of the scrotum, in which the two *corpora pampiniformia* are frequently connected together; and in this case a modification of the usual operation would be required to effect a cure.

It has been suggested that the anæmic condition of persons guilty of sexual excesses may be accounted for in this manner, viz., that local irritation, by producing sub-acute orchitis and varicose veins, causes an interruption to the progressive perfection of blood cells. The opinion that the depressing effects of inordinate sexual indulgence bears a *relative* proportion to the quantity of semen emitted has been now all but abandoned, and in its stead the more natural explanation offered, that they are due to the excessive succession of nervous shocks, and expenditure of nerve force, as likewise the moral influences of degrading practices. "But," as suggested recently by the reviewer of my friend M. Mauriac's work, in the "Practitioner," "if sub-acute inflammation of the testes or epididymis be a necessary step in the train of evils, it at once accounts for that immunity from the effects of the vice, which it cannot be doubted that many persons possess; and on the other hand (as the inflammatory affection is apt to pass unnoticed), it suggests that a sufficient search may frequently not be made into the causes of anæmic neuralgia, especially when the pain is manifested in quite a distant part of the body." Irritable testes, therefore, in addition to varicocele, may in certain cases be one of the results of disturbed sexual conæsthesis. It is characterised by paroxysmal or shooting pains along the cremaster muscle and spermatic cord, In

addition to which there is also actual orchitic hyperalgia, as shown by the great tenderness on pressure, the slightest touch of the clothes causing intense pain. Vomiting and a certain amount of fever may be thus induced; the pain is best relieved by support, and the administration of narcotics.

This condition must be distinguished from neuralgic pains extending from the perineum down the thigh, and which will frequently be found to be due to unsuspected stricture.

*Seminal Incontinence in its relation to Mental States.*

—One of the most important, and not unfrequently the most painful of the alleged effects of seminal incontinence, is that upon mind. I have a strong belief that the alleged relationship has been wantonly exaggerated. It is not denied that, physiologically, an intimate connection exists between the brain and the focus of generation, indeed the contrary has been established in the foregoing; but it is contended that independently of this there are other circumstances which predispose to insanity in these melancholy cases; and that in the greater number of recorded cases in which sexual aberrations and insanity are regarded as cause and effect, the conclusions are not based on a sufficiently wide induction. I confidently affirm, that not the least of the predisposing causes is the suggestion of insanity, in conjunction with a functional disturbance to which I believe the majority of continent young persons are more or less liable. When this comes from beyond the pale of the profession, and in the form of literary garbage too long tolerated and circulated with strange impunity in *our* country, it ought to be treated as any other form of villany; when it receives countenance

and encouragement from qualified members of the profession, it cannot be sufficiently deplored.\*

Supposing a thoughtless youth, who may have inherited the insane neurosis, to have been addicted in early life to the not uncommon practice of masturbation. He may have long abandoned the practice. He leads a continent life; and he finds in the literature of our profession that more than one seminal emission in a month is a disease, painted too frequently in the most ghastly manner, then I ask, Is the preparation for suicide or an asylum not the refinement of malevolence? How often is the physician placed in the position of having to witness the struggle which the confession of a trifling functional irregularity, or still worse, of a confessedly pernicious practice during thoughtless years, entails. Frequently men in a position to marry, and desirous of being so, are deterred from the matrimonial alliance because of an occasional seminal emission, and the dread of being unable to perform the marital obligations, and be obliged to confess to the cause of their, in many cases, imaginary ailment. I have known a case of this description where sometimes seminal emis-

\* It is to be regretted that a gentleman of Dr Hassell's reputation should be found quoting rubbish from one or two authors who have written extravagant nonsense on this subject, and giving expression to such statements as that "under the term spermatorrhœa are to be included all losses of the seminal fluid not occurring as the result of intercourse." "When several emissions occur in quick succession on the recovery from an illness, they are termed *critical*!" "The *consequences* of spermatorrhœa are even more numerous than the causes, and among them may be enumerated debility, disinclination to exertion of body or mind, timidity, want of memory, confusion of ideas, and despondency." These, there cannot be a doubt, are occasionally due to this cause; but the height of extravagance is reached in the assertion, that "phthisis, cerebral congestion, epilepsy, general paralysis, and insanity," are to be regarded as consequences save in the light we have endeavoured to explain.

sion took place but once in six weeks, yet the individual at the age of 40 never had connection with a female, and though desirous of marrying, was deterred by the dread referred to. Cases of this description require at the hands of the medical man the most delicate and considerate treatment. I am persuaded, as the result of not a little experience, that many of the suicides and cases of insanity now so frequent, have their origin in quack literature, and the prurient intellectual food so lavishly supplied by the low press.

It is perfectly indisputable that certain mental affections have a close relationship with sexual aberrations, and that these are particularly apt to occur at puberty.

Erotomania in the male, and satyriasis in the female, may be regarded simply as more exalted mental conditions of a normal state. It is to *this* cause, and not to sexual excesses, that the extravagant rhapsodies of J. J. Rousseau are to be ascribed.\* In a word, Rousseau was mad. That he was so is shown by his being the subject of other delusions, such as being persecuted by all the world; and the idea of associating his ravings on sexual subjects with an infirmity to which he confessed, is wholly untenable.

While it is contended that, as *a rule*, these mental aberrations are purely psychical, we confess that peripheral irritation, or disease of the central organs, may contribute to their development, or independently occasion them. Cases of erotomania are recorded, in which tumours or other affections of the cerebellum have been discovered *post-mortem*. In females, on the other hand, certain forms of recurrent mania are apt to

\* For a refutation of Lallemand's opinions regarding Rousseau, see *Explication de la Maladie de J. J. Rousseau, par le Dr L. A. Mercier*. Paris, 1859.



occur during the menstrual period; and in parturient females, the occurrence of puerperal mania is no doubt due to the important physical disturbances incident to those critical periods of female life.

Excess of coitus is often followed by cephalalgia, vertigo, hallucinations, degenerations of the cerebellum, especially suppuration and induration.

Compression of the testicles may occasion a fatal stupor, a circumstance taken advantage of in subduing fierce animals. Burdach \* asserts that imperfect development of the genitals has been occasioned by chronic dropsy of the cerebral ventricles.

Common observation has noted a relationship between a highly developed cerebellum and massive neck, and sexual potentiality.

Cases of priapism are common enough from injuries to the spinal cord. These, it is worthy of remark, occur only when the injury is sustained near the sixth dorsal vertebra, at which point the sacral plexus combines with the cord.† That part of the cord between this situation and the brain may be looked upon as the inhibitory portion of the nervous system in respect of the genito-urinary organs; and, *en passant*, it may be remarked that this might seem the proper situation for blistering (the region of the sixth dorsal) in cases of genito-urinary debility.

On the subject of insanity, turning from these parenthetical remarks, we find Dr Maudsley remarking—“The development of puberty may lead indirectly to insanity, by becoming the occasion of the vicious habit of self-abuse in men; and it is not always easy to say, in such cases, how much of the evil is due to pube-

\* Vom Bau und Lehen des Gehirns, t. iii. p. 75.    † *Vid.* p. 86 of 1st Ed.

scence, and how much to self-abuse. But the form of mental derangement *directly traceable to self-abuse* (the italics are mine) has certainly characteristic features. There are no acute symptoms, the onset of the disease being most gradual. The patient becomes offensively egotistical and impracticable; he is full of self-feeling and self-conceit; insensible to the claims of others upon him, and of his duties to them; interested only in hypochondriacally watching his morbid sensations, and attending to his morbid feelings. His mental energy is sapped; and though he has extravagant pretensions, and often speaks of the great projects engendered by his conceit, he never works systematically for any aim, but exhibits an incredible vacillation of conduct, and spends his days in indolent and suspicious self-brooding," and so on. In another place the same authority remarks—"We know that alcohol and opium do affect the brain by their actual presence there, and through the brain the mind, just as strychnia affects the spinal cord and its functions; and we know also that in the natural order of events, that continuance of perverted function should lead to organic disease. In the case of opium or alcohol, then, as in the case of a blow on the head, we believe the effect to be physical. We are further strengthened in this conviction when we take note of the decided effects of such a vice as self-abuse upon the moral character, or of such a sexual mutilation as eunuchs have undergone. Long before self-abuse destroys the mind, it destroys moral energy and feeling, this effect being the precursor of the intellectual impairment which goes on to utter dementia in the worst cases. Of the moral character of eunuchs, all that we can briefly say is, that in most

cases they have no moral character—their minds are mutilated like their bodies; with the deprivation of sexual feeling, they are deprived of all the mental growth and energy which it directly or remotely inspires.”

While, on the one hand, it is evident that Dr Maudsley has satisfied himself that there is a *special* form of insanity directly traceable to self-abuse; in another place he observes—“This is a form of insanity which certainly has its special exciting cause, and its characteristic features; nevertheless, I think that self-abuse *seldom, if ever, produces it without the co-operation of the insane neurosis.*” It seems to me that it is difficult to reconcile the statement that there is a form of insanity “directly traceable to self-abuse,” with the allegation that it is seldom, if ever, produced “without the co-operation of the insane neurosis.” Is the insane neurosis of itself not sufficient to account for the insanity, and does not the fact of an abandonment to the practice of self-abuse presuppose a depraved moral and intellectual organisation?

Referring to senile dementia, Dr Crichton Browne\* remarks, regarding the morbid propensities of advanced life, “Just as old people are either crusty or genial, so are senile demented, and, of course, the prevailing temper of the man comes to the surface in the diseased condition. Then morbid propensities occasionally display themselves, and of these, perversions of the sexual appetite are most frequently met with. Old fatuous men, in whom passion might be supposed to be dead, contract foolish marriages.” . . . Dr Carpenter has been made acquainted with six cases in which an

† Brit. Med. Jour. May 9, 1874.

extraordinary salacity developed itself at an advanced period of life, whilst concurrently with this, or following upon it, there was a kind of unsteadiness of gait, which may be held as indicating chronic disease of the cerebellum.

Esquirol, in his work "*Des Maladies Mentales*," remarks,—"*La masturbation, ce fléau de l'espèce humaine, est plus souvent qu'on ne pense, surtout chez les riches. . . . La masturbation, dont nous avons parlé sous un autre rapport, est signalée, dans tous les pays, comme une des causes fréquentes de folie; quelque fois est le prélude de la manie de la démence, et même de la démence senile; elle jette dans la mélancholie, conduit au suicide. Elle est plus funeste aux hommes qu'aux femmes.*" He also remarks that imbeciles and cretins specially abandon themselves to onanism. Deslandes\* notes that the impotent and masturbator fall into a profound melancholy, become timid and enfeebled, manifest an indifference for everything, and cherish a bitter distaste for life.† Richerand remarks that those who have been subjected to amputation of the penis are apt to fall into melancholy, which eminently disposes them to fever of a malignant character, and frequently terminates in death. Some years ago, Dr Ritchie of Edinburgh, then resident physician in Bethnal House Asylum, contributed a series of able articles to the "*Lancet*" on this subject.

Dr Ritchie there states that in 119 cases which were recognised, after admission into Bethnal House Asylum, to be due to this melancholy cause, in only six


\* *De l'onanisme et des autres abus vénériens.* 1835. p. 133.

† *Diction. des Sciences Médicales*, t. xl. p. 193.

was, what he calls the true cause, understood previous to admission. To those more particularly interested in this part of our subject I would recommend a perusal of Dr Ritchie's able papers. I have read them with the care which they merit; I am willing to admit the undoubted honesty which they display; but I am of opinion that Dr Ritchie has failed to prove his case. I attach far less importance to the statements of Esquirol, for sexual vice of every description is in France so prevalent that it might be made to prove anything. Instead of showing a cause of insanity in young men, Dr Ritchie has demonstrated rather the frequency of the vice in question. I believe the fact to be, that it prevails in public schools, and boarding-schools, to the extent of the relative frequency of insanity.

Mr Solly, referring to this subject, is very decided. Speaking of Dr Ritchie's papers, he remarks,—“He (Dr Ritchie) has called attention to a subject in which the profession feel the deepest interest. I for one am grateful to him for having had the courage to attack a vice, the existence of which is ignored by many schoolmasters and some medical men; nevertheless, it is practised to a fearful extent. I am surprised that he has doubts whether it is also the cause of epilepsy; I have none.”

In taking leave of this portion of our subject, I am not to be understood as denying the intimate relationship between the genito-urinary organs and the brain, and the consequent interdependence of healthy function as well as relative influence on morbid processes. Should affections of the brain be called into existence through abnormal processes occurring in the genito-



urinary organs, mental aberration is likely to follow, and *vice versâ*. But I contend that the existence of a *special* form of insanity as due to sexual excesses or to masturbation, has not been proved to exist; and I am unshaken in my belief that where mental aberrations do occur in this conjunction, there is usually an inheritance of the insane neurosis; and that the *suggestion* of insanity, the morbid shame, and the enforced secrecy imposed by sexual derangements, are strongly operative in the disturbance of the mental balance. Psychologists cannot, therefore, be too careful in avoiding overdrawn pictures, which are no sooner called into existence, bearing the stamp of authority, than they are made the instruments of torture to fill the coffers of the charlatan, or the gloomy wards of an asylum. By all means let the physician co-operate with the psychologist in arresting, by calling attention to the effects of a debasing and pernicious vice; but it behoves him as well to guard against the contingency of the means employed directly defeating the objects intended.\*

\* Apropos of this subject, Dr Mapother of Dublin, in an address "On American Medicine," delivered at St Vincent's Hospital, in opening the session 1870-71, remarks, "I have elsewhere contended that the spread of the knowledge of the functions of the human body was the efficient remedy against quackery. . . . Quacks are largely supported by those wretched persons whose diseases have been deemed incurable. The quacks who are most detestable are those who profess to prevent and cure sexual diseases. Their indecent advertisements have caused the minds of the young to dwell on lascivious subjects, encouraged masturbation, and made hypochondriasis common. They have had much to do with the origin and spread of such scarcely conceivable mixtures of lust and lunacy, as Mormonism and Free Love;" and though not bearing intimately on the subject under consideration, I quote the following from Dr Mapother as strongly corroborative of the views I have advanced in my address "On the Relations of Prescriber to Dispenser," and commented on in an editorial article in the "British Medical Journal" for April 22, 1871 :—"The prevalence of quackery, and the generally low state of the profession (in America), depend greatly on the general combination of drug

Among the consequences of preternatural sexual indulgence phthisis has also been ranked. In 1862 Dr Smith read a paper before the Medico-Chirurgical Society, entitled "A Statistical Inquiry into the Prevalence of Numerous Conditions affecting the Constitution in One Thousand Phthisical Persons when in Health." Dr Smith asserts that 11·6 per cent. of the males had committed sexual excesses; 18·2 per cent. had been addicted to masturbation, and 22 per cent. had suffered from involuntary emissions. To this the objections urged already as to insanity apply with equal cogency. All conditions which weaken the system predispose to phthisis, particularly in cases of the tubercular diathesis, and if sexual excesses debilitate, as it must be confessed they do, they may to that extent induce phthisis; there can be no closer connection as cause and effect. Taking Dr Smith's statistics just quoted, I believe they would apply with equal force to the entire human race as to the one thousand cases on which his inquiry is based. An ingenious writer has discovered that *clergyman's throat* is likewise to be ascribed to spermatorrhœa. Doubtless there are many men suffering from affections of this nature, of whom it is not improbable that a considerable proportion may have transgressed in youth, and finding authority for recognising sore throat as a symptom of spermatorrhœa will believe it, as people will believe in almost any absurdity; and what is physically wanting, an excited imagination is too ready to supply.

selling with the curative art; and their total separation, while greatly elevating medicine, would stimulate the scientific study of pharmacy—a remark equally applicable to these countries."—*Vide* the author's address in the "Pharmaceutical Journal" for 1871.

Affections of the heart, as due to spermatorrhœa, have as little foundation in reality. Disorders of the heart, as of all other parts of the body, are apt to occur in proportion as the constitutional vigour is impaired, and only in this wise can they be said to have any connection with genito-urinary affections.

Disturbance of the genito-urinary co-ordination of nervous influence is intimately associated with certain other pathological states, to which brief reference may be made in this place. These admit of natural division, as we have seen into those in which psychical disturbance is the preponderating cause, and those whose sole factor of production is of a somatic nature. As we have above indicated, to the former class belong nocturnal enuresis, spermatic incontinence, and hysteria; to the latter, reflex paralysis of the spinal cord, epilepsy, tetanus, and some others.

Of the most interesting of the former cases are those recorded by Dr Sayre of New York; they merit examination in detail. Dr Sayre describes his first patient as "a beautiful little boy of five years of age, but exceedingly white and delicate in his appearance, unable to walk without assistance or stand erect, his knees being fixed about an angle of 45°." Dr Sayre, who was sent for to perform tenotomy on the hamstring tendons of his little patient, soon satisfied himself "that the deformity was due to paralysis and not contraction, and it was therefore necessary to restore vitality to the partially paralysed extensor muscles, rather than to cut the apparently contracted flexors." Proceeding to this by means of galvanism, this gentleman accidentally discovered a peculiar condition of the penis, which is thus described:—"The body of the



penis was well developed, but the glans was very small and pointed, tightly imprisoned in the contracted foreskin, and in its efforts to escape, the meatus urinarius had become so puffed out and red as in a case of severe granular urethritis; upon touching the orifice of the urethra, he was extremely convulsed, and had a regular orgasm. This was repeated for a number of times, and always with the same result. The nurse stated that this was his condition most of the time, and that he frequently awoke in the night crying, because his "pee pee" hurt him, and the same thing had often occurred when riding in the stage or car; the friction of his clothes exciting his penis would cause erections."

Dr Sayre, naturally associating this abnormal condition with the paralysis, performed circumcision, which operation he fully describes. He adds, "No untoward symptoms occurred, and in less than two weeks the wound had entirely healed, and the penis was immensely increased in size. The prepuce was sufficiently long to cover the glans, and could be readily glided over it without any irritation whatever. "From the day of the operation the child began to improve in his general health, slept quietly at night, improved in his appetite, and, although confined to the house all the time, yet at the end of three weeks he had recovered quite a rosy colour in his cheeks, and was able to extend his limbs perfectly straight while lying upon his back. From this time on he improved most rapidly, and in less than a fortnight he was able to walk alone with his limbs quite straight." A short time afterwards this little patient is described as quite recovered, without the use of any other remedy whatever. If there were but one case of this description, it might be alleged

that the recovery and the performance of the operation were simply coincident; but Dr Sayre relates two other cases of a similar nature. His second case is as follows:—"Mr T. N., one of the first lawyers in our city, called on me at the very time the little fellow above described was making his farewell visit, to speak to me in reference to his son, a lad of fourteen years, that I had attended some months before for paralysis of his legs. He stated that he was not improving, and that he looked so badly in the morning, that he feared he was guilty of masturbation, and was very anxious that I should talk to him seriously upon the subject, and point out to him its dangers. As the little fellow, then running round the office, had just recovered from a paralysis that was evidently due to genital irritation, it occurred to me that the paralysis in the son of Mr N., for which I formerly had been consulted, might possibly be due to the same cause. He was sent to me on the following day, and after questioning him very closely, I found him unusually intelligent on the subject, strictly truthful and honest in his statements, and perfectly free from the vice of masturbation. Upon examining his penis I found it unusually large at the root and body, but very short; and the prepuce terminating in an opening scarcely large enough to admit a small probe. He stated that it always took him a long time to make his water, and he could never do so without great straining. His penis would become erected several times in the night, and always with great pain, and this difficulty was increasing as he grew older." The patient was chloroformed, and, as in the former case, circumcision was performed on the 23d March 1870, and on the 27th April he walked a

distance of more than a mile without fatigue, and with no evident signs of paralysis. A year previously, Dr Sayre attended this boy for paralysis of his lower extremities for about four months. In his own words, he "applied galvanism and electricity twice and three times a week, injected strychnine into the paralysed muscles every tenth day, put him on iron and other tonics, and applied India rubber muscles as assistants to the paralysed ones during all that time, in order that he might take exercise, and all without any benefit, because I had not ascertained the cause of his paralysis. And now, at the end of six weeks, the cause having been removed, he is entirely recovered without any special treatment whatever." And Dr Sayre adds in a footnote,—"*June 15th, 1870.*—This boy has gained nine pounds in weight since the 23d of March, is robust and ruddy cheeked, and has no symptom of paralysis whatever."

Of Case III. the following is an outline:—"F. G., West Eleventh Street, aged fifteen, a tall, slender, pale-faced ghostly-looking boy, was sent to me for 'nervousness' and fainting fits. He had been under homœopathic treatment for some months for neuralgia and weakness of the legs, which caused him to trip easily and fall; in fact, he described himself as having 'falling fits, because his legs would not hold him up.' He had all the appearance of a masturbator, but denied having been one, but stated that he was troubled every night with painful erections and frequent emissions. Said it took him a long time to make water, and sometimes it would stop entirely, and the end of his penis 'would swell up like an orange,' and when he squeezed it, 'a little white chunk would come out of the hole, and

then the bag of water on the end of his penis would all run out.' This swelling up on the end with what he called 'a bag of water,' had happened quite frequently. He had a very redundant prepuce, which could be pulled at least an inch from the extremity of the glans penis, was not adherent to it, and terminated in a rigid, inelastic ring-like orifice, scarcely large enough to admit of an ordinary knitting needle. The slightest irritation of the extremity of his penis produced the most painful erections, and this he stated was his condition most of the time." As formerly, Dr Sayre circumcised with the following result:—"It is now six weeks since the operation, and he has not had a single fit in that time, although he used to have one or two almost every day. He sleeps quietly all night, has had only two nocturnal emissions, has increased in flesh and strength, has become buoyant in spirits, and in fact is, as his father says, 'a perfectly changed boy.'"

Further, Dr Sayre relates three remarkable cases of hip-joint disease evidently due to reflex preputial irritation. "On the 7th April 1870, three cases of hip-joint disease came to my office within a few minutes of each other, one from Dover, N.J., one was sent me by Dr Walser of Staten Island, and one by Dr M'Sweeney of Grand Street, N.Y. The two latter were little boys about seven and nine years of age, rather delicate in appearance, and each of them in the second stage of hip disease. After questioning in the most careful manner, I could find no *local* cause for the complaint. They had received no injury, fall, blow, or wrench of the joint that I could get any information about, and I was somewhat annoyed, as in the immense majority of these cases I have always been able to trace

the disease to some local origin, rather than to a constitutional dyscrasia. While my assistant, Dr Yule, was making drawings of them, and taking notes of their cases, I examined the third case, the little boy from Dover, who was thirteen years old, and to my surprise I found, like the other two cases, that I could not trace the disease to any distinct recognised injury that he had ever received. He never had any severe fall, wrench, blow, bruise, or other injury of the joint which the father could call to mind.

“When examining his hips my thumb came in contact with his penis, which became erect almost immediately, and presented an exceedingly curious appearance. The penis was quite large, but very short, and had a long worm-like projecting prepuce, with an exceedingly small orifice, which admitted a small probe for nearly half-an-inch before the glans was reached. Anxious to know whether this condition of the genitals was connected with any loss of muscular power in the lower extremities similar to the case of Dr Sims, I asked the father whether he was active and spry on his feet previous to his getting lame, and he replied that he was the clumsiest boy he ever saw, in fact he was tumbling down all the time. That he had always to hold his hand when he walked in the streets, or he would be almost sure to tumble on the curbstone at every corner. His father said he had scolded him about his falling a hundred times, as he thought ‘his clumsiness was owing to his carelessness.’”

In the light of his former cases, Dr Sayre argues that the starting-point of the local mischief might be ascribed to a fall, owing to the muscular debility induced reflexly, and the initial lesion becoming aggra-

vated by a succession of falls. On making the discovery of the preputial irritation in this case, he proceeded to examine the other two, and to his surprise "found them almost counterparts of the one just described, both in their history and in the appearance of their genital organs, except that the prepuce, instead of having a worm-like elongation, was unusually short and attached to the glans, nearly to the orifice of the urethra, which was reddened, and its mucous membrane swelled like a granular urethritis. The least irritation would produce an almost instantaneous erection. In these two latter cases the prepuce was easily torn back with the thumb and finger nails, and the concreted smegma, which was impacted behind the corona, carefully removed. This slight operation, together with cleanliness, and frequent moving of the parts to prevent adhesions, answered all the purposes of circumcision, and at once quieted the nervous irritability."

I offer no apology for thus giving considerable prominence to the foregoing cases. I attach to them immense importance, as disclosing, possibly, a frequent source of infantile paralysis, and other numerous indications of nervous irritability in childhood, while, so far as known to me, Dr Sayre's cases are unique in medical literature.

The analogies presented by Dr Sayre's first cases, with those of genuine epilepsy, are remarkably striking. I am persuaded that due importance is not attached to peripheral irritation in these cases, as an element of nervous disturbance. What may be called sympathetic cases of epilepsy are frequent enough in medical practice. How frequently is the connection

between gastric and hepatic irritation and epilepsy unmistakable.

Looking at Dr Sayre's cases, and the closely analogous functional aberrations of the genito-urinary organs, it is not at all improbable that unsuspected irritation of the pelvic organs may be more frequently a factor in the production of epilepsy than generally surmised. It accords with my own observation that epilepsy is more apt to occur during and shortly after the period of puberty. Esquirol's experience has shown that masturbation has caused epilepsy, and Petit records a case of St Vitus's dance from the same cause.

This view of the pathology of epilepsy in certain cases receives confirmation from the beneficial results which have followed castration as a cure for epilepsy. On one occasion, Dr Mackenzie Bacon removed both testes from a lad, believing that epileptic fits from which he was suffering were to a great extent kept up by sexual excitement. Before the operation the patient had a great number of fits, and was seldom more than two or three days without a series of them. Dr Mackenzie Bacon tabulates the number of fits patient had after the operation. It is unnecessary to reproduce this table; suffice it to state, that "the fits have been greatly diminished in frequency by the operation, and the general condition of the patient has also much improved. His intelligence has increased, he is lively and better behaved, and able to be employed usefully. He is probably now as well as his mental condition will ever permit him to be, and I think no one can refuse the conclusion that he has benefited by what has been done for him."

M. Goupil records an extraordinary case of mas-

turbation in an infant of eighteen months of age. At first the parents attached no importance to the circumstance, but at two years of age epileptic fits came on. Having recourse to mechanical means the habit was conquered, and at the age of ten the child was in perfect health.

But wherein, I would ask, does the performance of this operation differ from clitoridectomy in the opposite sex? Is satyriasis a mental disease? Is epilepsy in females due to masturbation, as is believed to be the case in males? To my mind there is no difference in the operation relatively, and if castration in the male is, under peculiar circumstances, justifiable, excision of the clitoris in the female under like circumstances must be equally justifiable. The conditions being parallel, there is a parallelism in the operation. If the fact be admitted that the proximate cause of certain forms of epilepsy—the immediate cause being cerebral anæmia—is peripheral irritation, and that it is irremediable by the ordinary resources of our art, it becomes a momentous question whether it is not preferable entirely to emasculate the unfortunate victim of epilepsy in the male sex, rather than to allow progressive mental miseries, leading possibly to dementia, to go on unchecked; or in the female to remove an organ which exerts no influence over procreation; and if Mr Brown had selected his cases with a due regard to the indications justifying such a procedure, the *odium medicorum* alone could explain the harsh and unfeeling treatment to which he had been subjected, and which clouded his last days.

But the operation of clitoridectomy did not originate with Mr Baker Brown. As early at least as 1822, it was recommended by Dubois as a remedy in cases of



nymphomania; and it was resorted to with success by Dr Graefe of Berlin, in that year, under the following circumstances. The patient was born in the year 1807, and was a strong healthy child until the age of 14 months. At this time she was attacked with vomiting and fever; after recovering from the acute symptoms, she still continued weak and sickly; she could not walk until she was four years of age; she was unable to talk, and, in short, exhibited unequivocal symptoms of idiocy. All the remedies which were employed were unavailing; and as she advanced in years, her imbecility and her brutal propensities became more marked. She delighted in swallowing dirt and ordure; and she would stand for hours together in a fixed position with her tongue hanging out of her mouth, from which the saliva flowed in copious streams. She was fourteen years of age when the physician who published this case first saw her. He soon perceived that the girl had an insatiable propensity for self-pollution, which she performed either by rubbing her extremities on a chair, or by the reciprocal friction of her thighs. Since this time there could be no doubt as to the principal object to be aimed at in the treatment of the case. A bandage was applied capable of preventing friction in the sitting position, in which attitude she chiefly indulged her prurient propensities; a straight waistcoat was put on her at bed-time, and counter-irritation by the application of a hot iron in the neighbourhood of the part affected, was resorted to. These means, with the use of tartar emetic, the dose of which was gradually increased to a scruple, produced little effect. At the end of about a twelvemonth the excision of the clitoris was determined upon, and this operation was performed

by Dr Graefe, on the 20th of June 1822. After the cicatrisation of the wound, a marked amelioration of the symptoms was observed. The propensity to self-pollution was nearly eradicated; a few suspicious motions, the remains of a long-continued habit, were occasionally observed, but these were at length discontinued. The intellectual faculties of the patient began to develop themselves, and her education could now be commenced. She can at this time talk, read, reckon accounts, execute several kinds of needle-work, and a few easy pieces on the pianoforte.

It is a remarkable circumstance that this young girl, on emerging from the normal lethargy in which she had been sunk from infancy, assumed at once, without any intervening gradations, the character and tastes of adolescence.\*

Again, Richerand relates the case of a young woman so violently affected with this disease (nymphomania) as to have recourse to masturbation, which she repeated so frequently as to reduce herself to the last stage of marasmus. Though sensible of the danger of her situation, she was not possessed of self-command enough to resist the orgasmic urgency. Her parents took her to Professor Dubois, who proposed an amputation of the clitoris, which was readily assented to. The organ was removed by a single stroke of the bistoury, and all hæmorrhage prevented by an application of the cautery. The wound healed easily, and the patient obtained a radical cure of her distressing affliction.†

*Correlation of Symptoms as arising from Sexual Excesses and Masturbation.*—The question has been much debated by physicians, whether the effects arising from

\* Revue Médicale.

† Nosographie Chirurgicale.

preternatural excitation of the genital organs and excessive seminal emission are analogous to those occurring from too frequent sexual intercourse. General experience shows incontestably that more frequently constitutional derangement is associated with the former than the latter. In desiring an explanation of this undoubted fact, two questions offer for consideration,—Are the effects so produced due to the mere emission of semen, or the result of preternatural excitation, frequently repeated, of the genital system? No doubt seminal emission *might* take place to such an extent as, *per se*, to react injuriously on the constitution, but this result is rare; on the other hand, it is admitted that seminal ejaculation has a more powerful systemic reaction in proportion as it is attended with nervous excitement. At first sight this opinion seems to conflict with experience, with regard to the relative frequency of injurious results, as arising from onanism, and exaggerated coitus; but in reality it does not do so, as it is admitted, contrary to the opinions of some writers, that masturbation does *not* determine the same nervous excitement as coition.

Deslandes, accordingly, remarks that there is no doubt that coition, when reduced to its most simple form,—being almost a simple excretion of semen,—acts less injuriously than when attended with much excitement (*avec un grand éclat*); and that, accordingly, intercourse with prostitutes, and with passive females, as Hunter likewise observes, is less prejudicial than when the act is attended with a violent passion (*s'accompagne d'une violente passion*.)

An old writer\* criticises Hunter's opinion in the fol-

† Jesse Foot on the Venereal, 1792.

lowing terms :—" If it be considered as relevant at all to the present subject, that consideration must refer to an answer which I intend to the arguments of Mr Hunter, who has introduced the subject in his treatise upon the venereal disease, and who has there set up an opinion so singular, so different from any author that has gone before him, and so fraught with mistaken theory, that no opportunity which offers should be missed in order to express dissatisfaction with it. With respect to the morality or the immorality of self-pollution, that is not the question before us, although I am convinced that as much as it is repugnant to the evident path of nature and reason, it will have morality opposed to the mischievous effects arising out of it; for the mind will be debilitated alike with the body, it will be exposed to vicious assaults, from want of fortitude to stand up against them, and where our actions are at variance with reason, I think the morality of them will, and must be ever disputed. To say that excess of self-pollution does not debilitate both the corporeal powers and the mental faculties, is to deny a self-evident fact; for it is apparent to every inquirer, both from the confessions of those who have from want of resolution yielded to this selfish gratification, as well as from the change that is observed in the condition of their health. There never was, I may further remark, an author who ever dwelt upon this subject but held out the strongest warnings against the habit of it, and pointed out the evil tendency of it as productive of the most ruinous consequences to the constitution in general, to the venereal powers in particular, and to the mental endowments. Only let the symptoms arising from self-pollution long indulged in be referred to,

and let the indifference for that natural propensity which youth is prompted to gratify with woman by an irresistible impulse, when not tamed by this detestable vice, be also referred to,—and then let those who choose to doubt, doubt on if they dare, that this passion can be indulged to excess without harm. For although there may be a remaining desire for the enjoyment of a woman, yet there will be an incapacity to fulfil it; for the constitution being debilitated, and the limbs trembling, the very wish for enjoyment will be disappointed, the animal spirits will be confused, and the very doubt of success will take away the hope, whenever the gratification is attempted. In the natural enjoyment of a woman the calls of nature are fair; that which is indulged is concurred in by the agreement of the parts to participate in the important act. It cannot take effect without universal consent,—the penis must be erect, and the semen secreted. In this instance nature limits the indulgence, and if the penis be not erect, the desire is considered out of season. But this is not the case in self-pollution; the penis is, in that instance, often worked up to an erection, and that which could not otherwise be excited is excited beyond the limits of constitutional power, when solely left to its natural exertion.”

Notwithstanding what has just been advanced, it is proper to remark that the high authority of Trousseau inclines to the opinion, that to the mere loss of semen is to be ascribed the subsequent prostration following seminal emission, and he bases this opinion on the ability of the female to engage in sexual intercourse within a shorter interval, and more frequently than the male, while the orgasm to which her system has

been subjected is not less violent than that of the male. It is likewise maintained by the same authority, that the debility consequent on passive pollutions or unattended with erotic dreams and erethism, is much greater than when accompanied with cynic spasm. It must be remembered, however, that the occurrence of seminal emission in this manner absolutely presupposes both an advanced debility, constitutional as well as local.

The preponderance of evil consequences as arising from masturbation being admitted, the causes seem to be the following :—Masturbation is frequently indulged in at such an early period, that the genital organs have not attained their complete development, the system has not acquired its full energy, and both the local and general powers are less able to resist preternatural excitation. Again, masturbation is often more frequently indulged in than coitus, erection is stimulated, does not occur naturally, and doubtless the moral debasement is infinitely more potent than in the normal indulgence. Other circumstances, such as relative vigour, temperament, &c., combine to present a difference in the symptoms thus arising. I incline, therefore, to the opinion that, other things being equal, the local and constitutional sequences attendant on excessive coitus and masturbation must be analogous.

*Varieties and Causes of Spermorrhagia.*—Preternatural excitation of a gland,\* in obedience to the law

\* Supposons que l'encéphale soit fatigué par le travail intellectuel, par des préoccupations incessantes, des passions. . . . (ajoutons des émotions); supposons que l'innervation de la moelle s'use par les abus sexuels; dans ses divers cas, les centres cérébro-rachidiens s'épuisent dans leur action, au point de subir une sorte de paralysie; ils se trouvent pour ainsi dire séparés des nerfs périphériques, qui, dès lors, sont privés de leurs foyers de nutrition; ces nerfs ainsi isolés de leurs sources se dégradent, sinon dans leur texture, au moins dans leur fonctions. Que cette dégradation vienne à atteindre les nerfs

of reflex action, will lead to diminished nervous tone, chronic irritation, and exaggerated secretion. This condition is expressed in the law already referred to, *ubi stimulus ibi humerorum uberior adfluxus*, and the equally true and converse one, *ubi adfluxus ibi irritatio*. *The greater the amount of blood in a part the more is sensation heightened*, and *vive versâ*; hence coincidently with, or rather preceding the orgasm in both sexes, the genital organs become highly charged with arterial blood. This is due to a paralysing influence on the sympathetic system, and a heightened motor tone. Should the excitation be inordinately repeated sympathetic exhaustion may become permanent; dilatation of the minute blood-vessels of the sexual organs ensues, there is an exaggerated amount of blood in the parts, sensation is consequently unnaturally excited, and preternatural secretion results. This is undoubtedly the pathology of the abnormal hyperæsthesia of the prostate, testicles, and *vesiculæ seminales*, attendant upon sexual excesses. But this condition does not necessarily remain stationary; it may proceed to atony and atrophy of the organs involved. Hence two varieties of spermorrhagia may exist, according to the particular condition which the abnormal excitation has induced. The first variety attended with sthenic phenomena, hyperæsthesia, profuse secretion, and generally exaggerated functional activity; the other, with asthenic manifestations, atrophy, depraved secretion, and more or less sexual incapacity.

sympathétiques et pneumogastriques, toutes les grandes fonctions de la vie vont se modifier; le cœur et le poumon cessent d'agir selon le rythme normal; la circulation éprouve, des stases dans les glandes vasculaires, et la formation des globules devient defectueuse, etc, (G. see, Du Sang et des Anémies, 1866.)

In the former there exist prostatic hyperæsthesia, a condition made very manifest by passing an instrument, or by rectal examination, irritation of the vesiculæ seminales, and of the testicles. The emissions occur at night, and are attended with erotic sensations; seminal emission is sometimes followed by pain in the prostate, and the semen may be streaked with blood; and in coitus there is premature ejaculation of semen. This is remarked subject to the reserve, that occasional premature ejaculation is not necessarily a pathological condition, but the result of congestion of the genital vascular system and preternatural hyperæsthesia, as already indicated.

In the second variety, loss of semen takes place without venereal orgasm, is not necessarily attended with erection of the penis, takes place unconsciously during sleep, during the day, and with or without the slightest excitement, physical or mental; semen is passed at stool, and the condition lapses into impotency. Such cases, I have reason to believe, are not so rare as I conceived on writing the first edition of this work. Certain authors have drawn a distinction between pollutions and spermatorrhœa, embracing under the first the loss of semen which is accompanied by venereal orgasm, and under the latter all such losses as are unaccompanied by any venereal desire whatever. Hence Roubaud observes, that impotency does not necessarily coexist with "pollutions," whilst it is an invariable accompaniment of "spermatorrhœa; and that "pollution," to constitute a pathological state, must take place independently of volition and the natural sexual excitants. But, as we have seen, pollutions in the sense in which most authors regard the term, do



take place in, and are compatible with perfect health, and consequently this classification must be held as faulty.

Mr Benjamin Philips, in his papers on this subject, relates the case of a young man whose sexual organs were so debilitated, that on every occasion of receiving a letter from a former mistress emissions of semen took place, and the mental emotion occasioned by writing to her in return had a similar effect.

A medical friend informs me that he had a patient under his care whose sexual organs were so debilitated that he could ejaculate semen by a mere effort of the will. Again, semen may pass away unconsciously in the urine, and thus affect the health. I do not know whether Dr King Chambers still holds the opinion expressed in 1861, that this may go for years without any physical or mental impairment unless the patient's mind is directed to the subject. If he does so, I think he will find himself in a very small minority of the profession. Mr Teevan, on the other hand, considers this "true spermatorrhœa," and alleges that it is not usually due to debauchery, but to indigestion (!), "for in that complaint the semen becomes attenuated (?), and the bowels constipated; hence spermatozoa are pressed out by the powerful contraction of the levator ani. . . . Microscopical examination alone could determine the existence of true spermatorrhœa, and for that purpose the lowest stratum of urine passed during or after defecation ought to be examined." Mr Teevan would have some difficulty, I think, in proving his extraordinary argument.

Holding first rank among the causes of spermorrhagia must be classed masturbation and inordinate

sexual congress. The former is too often practised at a tender age, and to an extent that is appalling, in boarding schools—more particularly on the Continent—and in ignorance of the pernicious and debasing effects of the vice. For the prevention of this, as well as the preservation of health in other respects, the teaching at least of the elements of human physiology, as a branch of a liberal education, is imperatively demanded. The mysteries of life, and the laws which regulate health, cannot be regarded as holding a position in the mental cultivation of youth, second to a knowledge of the obsolete and frequently debasing customs of Greece and Rome.

“Sæviôr armis,  
Luxuria incubuit victumque ulcisitur orbem.”

All conditions which heighten reflex excitability in the sexual organs, conformably with what has been already advanced, will determine augmented secretion, and frequently lay the foundation of obstinate spermorrhagia. Of this nature are the following :—While we have seen that excessive coitus or masturbation may occasion orchitis, inflammation of the testicle may become the cause of preternatural seminal emission. All varieties of urethritis predispose to this condition; in this relationship gonorrhœa is commonly met with. *La chaudepisse tombée dans les bourses*, as the common people say in France. This inflammation may be occasioned either by simple contiguity, or through the medium of the nervous system. In these cases the emission of semen is attended with pain, and is followed by considerable malaise and feebleness. On the other hand, I have frequently noticed coarctation of the urethra supervene on masturbation, as in the following

case:—A young gentleman, for a year prior to consulting me, confessed to practising masturbation. His passions, he alleged, had been first excited by reading Boccaccio's Decameron. He had been engaged to be married within a month of the time I had seen him first, and fearing sexual incapacity, he consulted me. On passing an ordinary sized bougie great tenderness and narrowing of the canal were discovered in the prostatic region. Bougies were passed within given periods, alkalies, and sedatives prescribed, and in a fortnight afterwards a number *ten* could be passed without the slightest difficulty or the production of pain. Patient never had gonorrhœa; he married at the appointed time. His health and spirits have continued excellent.

Morbid conditions of the *vesiculæ seminales* are frequently a cause of spermorrhagia. John Hunter has remarked that diseases of the vesiculæ were frequently talked of, but that he never knew of one, thus indicating his disbelief in their occurrence. It would be going too far indeed to homologate this opinion, while admitting the comparative rarity of the diseases in question. *Post-mortem* evidences of diseased conditions of the vesiculæ are unquestionably met with occasionally. These comprise inflammation, thickening purulent collections, tubercular depositions, &c. According to Rokitansky, chronic catarrh of the vesiculæ is sometimes met with in advanced age, "accompanying mechanical hyperæmia of the pelvic veins, stasis, varicosity, and the formation of phlebolites; as a consequence of chronic vesical catarrh, as the result of repeated gonorrhœal catarrh of the urethra and the neck of the bladder, of excessive venery, and especially of masturbation."

Persistent inflammatory irritation of the vesiculæ may, owing to effusion of coagulable lymph, cause their obliteration, and interfere with their functional purposes to the extent of occasioning sterility.

The cellulo-fibrous substratum of the vesiculæ seminales is likewise liable to a low form of inflammation, which causes hypertrophy of the former, and adhesions whereby the vesiculæ become fixed.

Howship relates a case of disease of the vesiculæ complicated with spasmodic stricture and disease of the prostate. From the general feel of the parts, he remarks, on their removal, it was presumable the prostate was enlarged. But the careful and patient dissection of the parts at length completed, proved that the whole tumour was the result of a very enlarged and indurated state of the left vesicula seminalis. Its texture was firm as a gizzard, and it was so altered in appearance, that the true seat of the disease could be determined only by tracing its connections. A longitudinal section was made, laying it open, and it then appeared that the vesiculæ were exceedingly thickened. The cellular cavities within, much enlarged, were filled with a pale yellow cheesy substance, more consistent than scrofulous matter generally is, yet resembling it.

The opposite vesicula, towards its opening from the vas deferens, was becoming thickened, although its further extremity was unaltered, the cells exhibiting no trace of coagulable deposit; but, on the contrary, partly filled with the thin brownish fluid natural (?) to these cavities.

It would appear with respect to their development, that that of the vesiculæ has a direct dependence on

that of the testicles; thus as the testicles are deficient or absent, corresponding conditions are found in the vesiculæ; while, on the other hand, in those rare cases in which supernumerary testicles exist, the vesiculæ are said to be increased in number.

The vesiculæ siminales are also sometimes the seat of hydrocele, a circumstance which should be kept in view in the examination of the sexual system in conjunction with its morbid states. Simulating as it does so many other conditions requiring operative interference, it is highly expedient that hydrocele of the visiculæ be satisfactorily diagnosed. A most instructive case of this kind is recorded by Dr Smith of Baltimore.\* After stating that a considerable tumour occupied the hypogastric region, Dr Smith remarks—“I was greatly surprised then when, on introducing a long catheter fairly into the bladder, there flowed only an ounce of perfectly healthy urine. On placing my hand on the tumour, I found it not in the least reduced in size, and as I moved the catheter, I distinctly felt the instrument gliding about in close contact with the walls of the belly, being pressed forwards by the pyriform tumour. Here for a moment we were completely at fault. The tumour was not the distended bladder, but was manifestly a cyst containing a fluid. It was posterior to the bladder, and displaced that organ forward. After another careful exploration externally, I introduced my finger into the rectum, and found the prostate normal; but on carrying the finger deeply and to the left of it, I at once encountered an elastic tumour, communicating the sensation of a sac tensely distended with fluid. On palpating with the other

\* *Lancet*, Oct. 1872.

hand on the abdomen, the vibratory motion of the fluid was manifest. The matter was now clear. We had a hydrocele of the left seminal vesicle. We at once resolved on tapping through the rectum. This I effected with an ordinary straight trocar. On withdrawing the stylet, the fluid issued with force, and in a few minutes we drew off ten pints of a brown serous fluid, bearing no resemblance to urine. No unpleasant symptoms followed; but in some four weeks it again filled, and was tapped by my colleague in the case. After this there was no recurrence."

Certain affections of the prepuce, even as they react on the spine, exercise an influence on the secretion of semen, augmenting its quantity, and from the plethora that they cause, determining its frequent discharge. Of this nature are præputial irritation, inflammation of the prepuce and glans, erysipelas, eczematous and other eruptions, and congenital phimosis. Urethral discharges so occasioned are extremely obstinate, and require for their cure the removal of the primary affection.

In the cases of spermatic incontinence, constituting a pathological state, which have come under my notice, I believe I am safe in asserting that in three-fourths of them a preternaturally tight prepuce existed, with sebaceous accumulation in many of them. The condition of the prepuce presents four varieties—1st, A preternatural length; 2d, Abnormal tightness of the præputial canal; 3d, Partial or general adherence of the prepuce to the glans; 4th, Inflammation of the balano-præputial mucous membrane, with abnormal secretion; 5th, Abnormal relation of the orifice of the urethra with that of the præputial canal; 7th, Warts

of the prepuce ; 8th, Præputial calculi. In new-born infants complete occlusion of the preputial orifice sometimes exists.

Certain affections of the rectum coincide with, and are the occasional cause of sexual aberrations, such as hæmorrhoids, ascarides, fissure, in the same relation as in nocturnal urinary incontinence. The irritation so caused has in children determined the practice of masturbation. To the intimate connection, through the medium of the nervous system, which exists between the rectum and the urinary and sexual organs, detailed reference has already been made. Strange as it may appear to some, continence has been enumerated by authors as one of the causes of spermorrhagia. Mr Erichsen believes that "spermatorrhœa may be induced by continual efforts to repress the natural sexual desires by a life of enforced or unavoidable continence." Civiale states that he has been consulted by patients who, during many years having observed an absolute continence, became affected with grave diseases of the seminal apparatus ; almost all his cases, however, coincided with the tubercular diathesis.

Spermorrhagia indicates active secretion of the semen, owing to the abnormal phlegmasia of the parts, and it may doubtless happen that in continent persons of an excitable temperament ungratified sexual passion may so impress the imagination as to react in this manner on the genital system. It must follow, then, *that the converse will be equally true*, a conclusion to which we shall in the sequel refer. On the other hand, excess of continence has been alleged to be a cause of impotency ; and here a condition different from the foregoing has existence. The one, however,

may be but a stage of the other. Further consideration of this subject, under impotency, will engage our attention.

It has been alleged that excessive smoking is an occasional cause of spermatic incontinence. That it may so act upon the genitals, through its influence on the cerebellum, cannot be contested. It has been stated, on the other hand, that in countries where ergot of rye exists that the males have a remarkable salacity, and that the females are peculiarly liable to abortion.

Lehmann records the case of a man of thirty, to whose arm the application of a fly-blister had occasioned, the following night, repeated pollutions. The very smell of cantharides produced the same effect, and it sufficed almost to hear it even spoken of to be threatened with an involuntary ejaculation. The genital organs of the man were healthy, but in youth he had been addicted to excessive masturbation.

In other cases, doubtless where there pre-existed debility, trivial circumstances have been known to determine emission.\*

*The Analogies and Relations of Nocturnal Enuresis and Seminal Incontinence.*—Looking in retrospect on what has been advanced in the foregoing, we find that nocturnal enuresis and its prototype, spermatic incontinence, have occupied our attention, as likewise hysteria, reflex or traumatic epilepsy, and the very interesting subject of reflex paralysis, as illustrated by the important cases narrated by Dr Sayre of New York, and other kindred subjects. We have seen that in each of these diseases a disturbance of nervous co-

\* *Vide* page 133.



ordination is the immediate factor in their production—the remote being different in each. We have likewise shown that the balance of nerve force, or equipoise, may be disturbed from two poles—the somatic and the psychical. And it has been made manifest that, in the case of the disease which first engaged our attention, enuresis, it is of a twofold variety,—the one due to involuntary spasm of the detrusor fibres of the bladder, of centripetal, or centrifugal origin—what might indeed be called sthenic enuresis. This Trousseau regards as an erethism of the detrusor fibres, similar to erection of the penis; the other, a variety of this affection due to structural changes in the sphincter vesicæ, whereby any considerable accumulation of urine is incapable of being retained in the viscus, and what might, in contra-distinction to the other, be termed the asthenic variety. In considering the etiology of the first variety, its causes have been ascribed to the presence of ascarides, stone, preputial irritation, and those cases where, probably from hyperæsthesia of the bladder, or acrimony of the urine from mal-assimilation, an impression is made upon the brain, whereby the functional necessity of micturition is presented to the central organ, and in which the act may then be considered rather voluntary than involuntary, though occurring during sleep. It will be obvious, therefore, that according to the cause diagnosed, so will the treatment be regulated.

Generally speaking, the enuresis is of the variety due to hyperexcitation of the detrusor fibres—the erethism of Trousseau; and the cause being removed, the viscus is functionally restored. But if the malady have been of long duration, as in the case of seminal incon-

tinence and the corresponding generative organs, atony of the sphincter supervenes, a circumstance which must be held in view in treatment. Again, temporary incontinence of urine is a manifestation of various nervous affections, such as hysteria, hypochondriasis, or nervous excitement from whatever cause produced, even as in excitable persons mere nervous excitation is sufficient, *occasionally*, to cause involuntary seminal ejaculation.

In cases of hysteria, it has been attempted to explain the incontinence of urine and profuse secretion on the supposition that spasm of the cutaneous capillaries takes place, and that the blood is thus driven to the internal organs, and more work therefore imposed upon the kidney. This is not so. An impression, as we have already seen, is made upon the sympathetic, its influence is withdrawn from the minute vessels and the heart, the blood circulates more freely, visceral congestions ensue, increased secretion of urine, and, by the same influence, diminished tone of the *sphincter vesicæ*. The *diabetes insipidus* of some writers is purely of this nature, is not necessarily associated with any organic change in the bladder, and may be regarded but as an interesting physiological occurrence.

Turning now to the analogous affection—spermatic incontinence—we have arrived, it will be remembered, at the conclusion that, like enuresis, its disturbing element may be either somatic or psychical. We confine ourselves, in the meantime, to the former. Nervous distribution to the bladder and the reproductive organs is so intimate that it will readily be conceived that what disturbs the one is most likely to disturb the other, and, while this holds good pathologically, it is equally true in a therapeutical point of view. Hence

the observation that children who have been liable to nocturnal enuresis are more liable than others to seminal incontinence during adolescence. A little reflection on the anatomical relations of the parts in question will show how this should be. Ellis regards the prostate as "essentially a muscular body, consisting of circular or orbicular involuntary fibres, with one large central hole for the passage of the urethra." The circular muscular fibres of the prostate are continuous behind with the middle or detrusor fibres of the bladder. These fibres Ellis proposes to call the *orbicularis vel sphincter urethræ*. Again, the external or *detrusor urinæ* fibres of the bladder spread out upon the surface of the prostate gland, forming its external muscular coat, while the longitudinal fibres of the bladder constitute an internal muscular coat of the prostate. The anatomical connection is thus most intimate. Again, we have seen how intimate the connection of these parts is with the brain, through the abundant distribution of the branches of the sympathetic and sacral plexus.

Trousseau has referred to the relationship between enuresis, epilepsy, hypochondriasis, insanity, and locomotor ataxy. "Could we but penetrate," he remarks, "into the family secrets, we should often find that among the predecessors of our patients there were brothers or sisters who had had serious diseases of the nervous system. . . . We should thus find as an explanation of the spermatorrhœa, as an explanation of the nocturnal incontinence of urine, hereditary and personal predisposing causes; and should therefore have no right to attribute the nervous symptoms to the spermatorrhœa. It is far more reasonable to think

and say that the nocturnal incontinence of urine and the spermatorrhœa are consequences of an unhealthy state of the encephalon, and particularly of the spinal marrow, a state the nature of which it is not easy to specify."

Tripier considers that seminal incontinence is allied to a nervopathy of the nature of cerebral paralysis, and that the varied affections of the genito-urinary organs, which are usually regarded as causes thereof, can be regarded only in the light of occasional factors in the production of reflex action.

It is highly probable that in the initial part of seminal ejaculation involuntary spasm of the prostate, the erethism passing back through the ejaculatory ducts to the *vas deferens* and *vesiculæ seminales*, takes place. This is analogous to the erethism of the detrusor fibres in nocturnal enuresis.

We have referred above to that property of the law of reflex irritation, whereby the vaso-motor nerves of a part are influenced through the nervous centres, causing first, temporarily, partial nervous paralysis, congestion, and ultimately, if preternaturally protracted, inflammation, which is more likely to become chronic in vascular bodies. The emission of semen, we have seen, is a reflex act. Irritation, beginning at the glans penis, is transmitted through the spinal cord and brain to the prostate, vesiculæ seminales, vas deferens, and the testicle. In the normal condition of the parts a certain interval elapses before reflex action is established, but given a certain amount of irritation in any of the organs mentioned, and in a direct ratio is reflex action anticipated, for the greater the amount of blood in a part, so is its *special* sensibility heightened, and

*vice versâ*, and with more facility is reflex action induced. Of this we shall have more to say in the sequel. Abuse of the genital functions will, in obedience to the law of reflex excitation, give rise to irritation, the result of a sub-acute or chronic inflammation in the organs thus preternaturally excited; hence, in the vast majority of instances of spermatic incontinence, there exists chronic phlegmasia of one or more of the genital organs.

*Diagnosis.*—The diagnosis of nocturnal enuresis will present no difficulty; it is otherwise in those cases in which spermatic incontinence really occurs to such a degree as to constitute a pathological state. The characteristic manifestations of this condition resolve themselves into such as are constitutional and those of a local nature. Prominent in the former rank are the several mental aberrations; hypochondriasis, failure of memory, defective vision, taking the form of amblyopia or diplopia, perversion of the sense of hearing, *ennui*, insomnia, general enfeeblement, derangements of the digestive functions, and local nervous disorders of the spine, cerebellum, &c. It must be borne in mind, however, that in many cases the nervous symptoms are due to groundless fears and reproaches of conscience. Of the local symptoms, indications of localised or general phlegmasia of the genital system exist; prostatic irritation, orchitic hyperæsthesia, irritation of the vesiculæ seminales; of these the most frequent manifestations are, in addition to the subjective symptoms, frequent seminal emission, nocturnal or diurnal, according to the gravity of the case, and correspondingly attended with more or less sexual erethism; pre-

clpitate ejaculation and subsequent dull pain are more pathognomonic of chronic irritation of the vesiculæ. The testicles and penis are in some cases diminished in size. With regard to the seminal fluid itself, it is thin and watery, and contains few or no spermatozoa. When it does contain spermatozoa, they are diminished in size and vigour; sometimes they are dead, or they assume a spherical form. The urine may contain semen, passed either with the first drops of the urine, or more frequently coincidently with the contractions of the perineal muscles which expel the last drops of the urine; and finally, semen may unquestionably be passed at stool, either when the bowels are confined, or perfectly lax.

*Prognosis.*—The prognosis in cases of nocturnal enuresis is decidedly favourable. In like manner it is favourable in the majority of cases of seminal incontinence. Much will obviously depend on the extent to which, and the period at which the sexual organs have been subjected to undue excitation, and the stage at which patients come under treatment. I have seen cases, however, in which the most varied treatment was attended with little benefit. Of these, I was specially and grievously disappointed in the case of a gentleman of whom I have lost sight. He was twice cauterised, and with but very temporary if any benefit. He himself describes his case as being a “sufferer from spermatorrhœa for the last thirteen years—was initiated into the habit of self-abuse by a school companion—and continued till nocturnal emissions came on, which were very frequent at first, every second or third night for about six weeks.” His appearance, he states, was miserable; there was great emaciation, with loss

of strength, and also great aversion to society. He seemed to me prematurely aged looking, had a peculiar sallow appearance, and suffered from loss of memory, and other mental perversions. I have no doubt whatever that the cause of his condition was sexual, and I regretted and was disappointed at the little benefit which resulted from treatment, when he passed beyond my observation. Such cases, however, are rare, but there can be no reasonable doubt of their occasional existence.

*Treatment.*—The rational treatment of all diseases must be based on a correct appreciation of their etiology, and an intelligent and well-founded knowledge of the properties of the remedial agents or accessory means employed for their cure. With regard to enuresis, the *error loci* may be either of two conditions,—an erethism of the detrusor fibres, of peripheral or central origin, or an atonic state of the *sphincter vesicæ*. It will be obvious that, according to the diagnosis, treatment, to be deemed rational, must be based on the particular necessity. The pelvic viscera, as we have seen, are supplied by nerves from the sympathetic and cerebro-spinal system. It is the function of the former to communicate and appreciate, so to speak, *the special sensibility* of the given parts to which it is furnished. All organic movements are independent of the will, and have consequently an independent nerve or nerves of sensation, while the ordinary nerves of sensation subserve the purposes of volition. It has been satisfactorily demonstrated that a certain class of remedial agents\* act by influencing the chemical changes which

\* *Vide* Author's pamphlet "On Therapeutics and Disease." Churchill.

occur in the body, and that another class seem to act primarily by causing certain impressions on particular portions of the nervous system. Hence a rational and intelligent classification and selection of remedies can be made. We are at present concerned, especially, with an abnormal condition of spinal reflex-excitability. On this subject, Meinhinzen's\* experiments are peculiarly instructive. Operating on animals—chiefly frogs—the disturbing influence of the brain being removed by section of the cord below the medulla oblongata, he arrived at the following conclusions. The test of the degree of excitability of the spinal cord was in most instances very dilute ( $\frac{1}{4}$  per cent.),—sulphuric acid, which was applied to the surface of the skin at intervals of a quarter of an hour, and the time before contraction occurred noted. Meinhinzen found that bromide of potassium rapidly depressed the excitability of the cord, and ultimately entirely abolished it; and he gives experiments to show that this action is due not to any effect *on the periphery, or on the nerve cords, but on the spinal cord itself*. The salts of zinc he found to have a similar action. He considers the acetate might be regarded as a narcotic. Chloral hydrate lowers the reflex-excitability, and its action is also central. Experiments with strychnine brought out the curious fact, that whilst the nerves and muscles become highly sensitive to *mechanical* irritation, there is no material increase upon the application of *chemical* stimuli. Quinine, even in moderate doses, rapidly diminishes, and ultimately extinguishes, the reflex-activity of the cord; but this action is apparently not direct, but in great measure indirect, through

\* Pflüger's Archiv. (Band. vii. Heft. 4 and 5.)



disturbance of the circulation and arrest of the heart's action. Alcohol (10 per cent.) first, and for a long time, greatly lowered, and then exalted the irritability of the spinal cord. Caffein lowered it ( $\frac{1}{2}$  c. c. of 10 per cent.), almost entirely abolishing it in four hours. Morphia first depressed, then exalted, and finally abolished the excitability of the cord. Digitalis has no influence on the spinal cord as a centre, but it acts as a depressant upon it, through its action on the vasomotor system.

How far do these observations harmonise with empirical success? The enuresis of children is, generally speaking, of the variety in which erethism of the detrusor fibres is the immediate cause. Local sources of irritation being first removed, the bad habit, so to speak, on the part of the bladder may still remain, and for the cure of this condition chloral hydrate has been eminently successful, the *modus medendi* being made manifest by the experiments above detailed. Not second in efficacy to chloral hydrate, if not superior to it in the variety of enuresis under consideration, is belladonna, or its active principle atropia. Recurring to the toxic effects of belladonna, we find that it causes dryness of the fauces, of the tongue, extending to the pharynx and larynx, huskiness of the voice, difficulty of deglutition, thirst, dryness of the lips and sometimes of the nose and eyes, dilatation of the pupils, and occasionally an erythematous eruption. Grouping these symptoms together, in conjunction with what we know of the influence of the sympathetic over the minute blood-vessels, is it not obvious that here we have a stimulation of the fibres of Remak? now we have postulated above that the sensibility of a part is in a direct

ratio to the amount of blood which it contains; if this be so, and the fact is indisputable, that belladonna and atropia act as *sedatives* by *stimulating* the fibres of Remak, *and thus diminishing the amount of blood in the part so influenced*. Camphor and hyocyamus have probably a like influence, but *not opium*, which is so frequently given in these cases, as it acts, after its stimulating influence has subsided, rather by paralyzing the fibres of Remak, and consequently increasing the heat of the body.

In the opposite variety of enuresis, where atony of the sphincter has supervened on long-continued hyperæsthesia, it will be obvious that a directly opposite line of treatment is demanded. In these cases, preparations of strychnine, nux-vomica, ergot of rye (of which the watery extract may be beneficially combined with nux-vomica), are indicated. We are in possession, in my opinion, of few agents which possess a more powerfully specific influence over the pelvic viscera as a tonic than the tincture of the muriate of iron judiciously administered, and I am under the conviction that the formula of the Edinburgh Pharmacopœia\* is preferable to that at present followed. The *rationale* of its influence seems to be thus. The withdrawal of blood, by diminishing to a corresponding extent the amount of red corpuscles, lowers the innervation of the nervous centres. Supposing a drain made upon the system by any chronic discharge, the blood becomes, in popular phraseology, "thin;" *i.e.*, deficient in iron, and there is, consequently, diminished nervous power, a fact indicated by the dropsies attendant on leucocythæmic

\* That of the Brit. Phar. decomposes readily owing to the nitric acid employed in its preparation, oxide of iron being precipitated.

conditions. Iron furnishes, or stimulates the formation of red corpuscles, and acts correspondingly as a nervous stimulant. Pressure by means of bongies fixed in the urethra, and other mechanical means, for the cure of enuresis, though anciently held in high esteem, are now, as a rule, properly discarded. What may be termed the moral treatment of enuresis is not to be overlooked. The tendency to spasmodic contraction of the bladder is to be obviated by desiring the patient to resist as much as possible the urgency of micturition, whereby the spasmodic action may be corrected by moderate distension. Water should be passed before going to bed, and if necessary the patient should be wakened during the night and compelled to pass water voluntarily. Much benefit will be derived from cold-bathing, general or local. Galvanism is occasionally used with signal benefit.

In some cases, especially in the adult, enuresis may be occasioned by catarrh of the bladder, independently of the presence of stone, as from the extension of gonorrhoeal inflammation by continuity, or the forcible introduction of too strong injections into the bladder, as likewise from prostatitis from the incautious use of instruments. In cases of catarrh of the bladder, great benefit is to be derived from the careful washing of the bladder\* with tepid water simply, or in conjunction with small quantities of the permanganate of potash, a weak solution of the bichloride of mercury, or chlorate of potash, &c. Both the permanganate and the bichloride smart very severely, and the precaution to use them sufficiently diluted is a very necessary one. Seda-

\* An elegant instrument for this purpose is supplied by Maw, Son, & Thompson, of London.

tives may in certain cases be beneficially combined, though it is a mistake to believe that any quantity of a powerful narcotic may be introduced into the bladder, relying upon its non-absorptive power. And this brings us to a subject which possesses sufficient interest to merit somewhat detailed examination. I have certainly seen the constitutional effects of mercury thus induced; and as my case, on its publication in "The British Medical Journal," excited a good deal of interest, it may not be out of place to reproduce it here, with some other matters which appeared in the same journal relative thereto. I quote it as it occurs in vol. i. of "The British Medical Journal" for 1869:—

In one of the lectures recently delivered and published by Sir Henry Thompson, "On affections of the urinary organs," the following passage occurs:—"In circumstances of great pain you may inject anodynes into the bladder if you please, but they are of little value. And you need not be afraid of the quantity, for the mucous membrane of the bladder appears to have no absorbing power, unlike the neighbouring tissues which line the rectum."

The following case, which has just occurred in my practice, so thoroughly substantiates the fallaciousness of this doctrine, that I am induced to place it on record:—

M. M. C., a female, had been under my care for a short time in consequence of chronic cystitis. Having employed the usual constitutional treatment in the first place, but with no very decided benefit, I adopted the topical treatment recommended so strongly by the distinguished surgeon referred to, injecting acetate of lead and nitrate of silver after his method. My

expectations not being realised, at least so promptly as I anticipated, I resolved upon injecting a weak solution of the bichloride of mercury, from which I have obtained the best results in other chronic inflammatory affections. Accordingly, I injected, on January 27th, about three ounces of a solution containing,\* as I firmly believe, little more than a quarter of a grain of the bichloride. The patient then left my house, being desired to retain the solution in the bladder as long as possible. I was requested to visit her on the succeeding day, when, to my annoyance, she complained bitterly of the pain the last injection had occasioned her. *It was not retained in the bladder for over twenty minutes.* She stated that she had a most unpleasant taste in her mouth, "wersh," as she termed it, or, in more familiar terms, a brassy taste; that† her gums were painful; and on examination, there was at least evident tenderness, and for two or three days afterwards she passed very little water, and then with very considerable pain. I need not say the statement of the subjective symptoms was voluntarily tendered, and that the patient had not the remotest idea that the symptoms complained of were due to the treatment employed. The internal administration of anodynes relieved the pain, and I am hopeful that, notwithstanding the disagreeable consequences, improvement will ensue. With such a case as this in view, indicating as it does the great absorptive power of the bladder, I would be exceedingly chary of indiscriminately inject-

\* I am now somewhat suspicious that, as the result of an accident, the quantity of the bichloride was greater than above mentioned.

† The views here expressed have been recently confirmed by the researches of M. E. Alling.

ing anodynes into this organ. From this circumstance it will be obvious certain medico-legal questions might arise, and it is desirable that until Sir Henry Thompson's views are more conclusively established in respect to anodynes, his statements at all events should be received with reservation.

Such is my case as published in "The British Medical Journal," and the only comment I have now to make upon it is, that believing the solution to have been stronger than I then imagined, I must modify my belief as to the *great absorptive* power of this viscus, to one that it has absolutely absorptive power.

A correspondent of the same journal, with reference to the above case, communicated the following interesting note:—

"That the bladder is able, under special circumstances, to absorb the water from the urine contained in it I have no doubt, from an observation made in my own person. Some years ago I started for a walk of many miles along the sea-coast, and when near my destination I was about to pass urine, when I discovered to my consternation that my progress further was arrested by the jutting rocks. My attention was immediately diverted to my novel position, and for some time I was engaged in various schemes for my extrication. As none were feasible, I was forced to remain an exile on the shore until the morrow allowed me to retrace my steps. It was near midnight when I suddenly recollected that I had been arrested almost in the act of micturition, and I thereupon emptied my bladder, but it was more from the idea of fulfilling a forgotten engagement than from necessity. My surprise was then great when I remarked that the quantity

of urine was small, as I was sure, from my own feelings, that the bladder had some hours before been full. The physiological fact of the absorption of the urine, or at least of its aqueous portion, forced itself upon my conviction, and I have not the slightest doubt that this did take place. I should state that, having no food, my hunger was great and my thirst painfully distressing. Now, if the sense of thirst be due to the want of water in the system, its requirements were considerable in my case. Of course I cannot prove to a demonstration what amount of urine my bladder held at three o'clock, and what amount at eleven, but I know that the quantity was small at the latter time, and at the former my desire to micturate was as usual, after having had no relief since the early morning. I believe also, that I was the subject of another interesting physiological experiment—that my thirst was subsequently much alleviated by absorption of water from my wet clothes.”

This seems conclusive proof of the absorption of the watery portion of the urine even by a healthy bladder.

In the “*Gazette de Hôpitaux*” of March 7, 1868, M. Seglas admits the absorptive power of the bladder, as proved by experiments on animals; M. Demarquay, as finding it very feeble; and MM. Russ and Susini, on the other hand, as denying it altogether, from experiments on healthy men.

Apropos of the controversy in “*The British Medical Journal*,” the editor observes,—“A good deal of interest has been excited on the question of vesical absorption as a physiological phenomenon and therapeutical means, by the notes on the subject which have recently appeared in “*The British Medical Journal*.” On Wednesday Sir Henry Thompson read Dr Black’s recent note

in the Journal to his class, in which he (Dr Black) calls in question the accuracy of his previous statement in public lectures, that there is practically no power of absorption resident in the living membrane of the bladder. To illustrate the fact, Sir Henry injected half a fluid ounce of liquor opii into the bladder of a patient. An hour afterwards there was not the least sign of narcotism."

Dr Braxton Hicks contributed his views on the question at issue, at the same time, in the following manner:—"That absorption into the system of materials injected into the bladder does take place, was well seen in a case reported in my lectures on the subject, in 'The Lancet,' where eight grains of morphia were injected by mistake at one time, with marked symptoms belonging to the drug, but wonderfully out of proportion to the quantity employed. But this does not in any way militate against the use of injections into the bladder, because these are intended to be applied directly to the mucous membrane to restore its functions. In cases of over-sensitiveness, or of abrasion, &c., then the effect of morphia injections is well marked; but the quantity of the fluid should be small, and the dose of morphia not less than one grain. If more than an ounce of the solution be employed, the irritable bladder shortly expels it, and its effect is lost," &c.

My view of the matter received further corroboration from Dr Tilt, who wrote as follows:—"The result of Sir Henry Thompson's experiments on vesical absorption are so unexpected, that it would be desirable to know whether the liquor opii was injected into a healthy or a diseased bladder"—a difference which I previously



suggested in a brief reference to Sir Henry's experiment in the following manner:—"What I contend for is, that my case *clearly illustrated the absorption by a diseased bladder of a mineral solution*. In the case on which Sir Henry Thompson experimented, nothing being said to the contrary, I suppose the bladder was one in a healthy condition. To reconcile the differences of opinion on this very interesting subject, I think it very probable that the absorption may be determined by certain pathological conditions, such as abrasion, &c. It is clearly manifest that the bladder does or does not absorb; and the observation and experience of such men as Dr Hicks cannot be questioned so far as accuracy is concerned, and cannot be reconciled save on some such assumption as I have made."

Not only does the bladder absorb, under special circumstances, some of its contained water, but according to Kaupp, some of the solids also; after the water, in order, come the phosphates, the chlorides, the sulphates, and, finally, the urea.

I am convinced, Sir Henry Thompson's opinion notwithstanding, that the bladder does absorb, and that the degree of absorption may be influenced on the one hand by the condition of the viscus itself, and on the other by the nature of the fluid so injected. I am persuaded that the injection of anodynes into the bladder is beneficial, while I maintain that their injudicious or reckless employment in *diseased* conditions of the organ is not without risk, and that it is not necessary that they should be absorbed in order to act as local sedatives.

We have hazarded, as may be remembered, the belief that in certain cases of enuresis, so delicate is the adjustment between the two sets of muscles, that irritation of

the detrusor set is apt to be followed by atony of the sphincter, and we have referred to the efficacy of the tincture of steel in these cases; in addition, the employment of the constant galvanic current—though it is more applicable to cases of paralysis of the viscus generally, occasioning retention—may be enjoined; as likewise blistering to the sacrum and perineum, or to the region of the sixth dorsal, for reasons to which we have referred above. Small doses of tincture of cantharides, failing other remedies, may be tried, with the prospect of benefit.

According to Goelicke, in a dissertation *de Trichosis*, published in Frankfort in 1724, there is a species of incontinence of urine due to the growth of hair in the bladder; the same species is described by Scultetus under the head TRICHLIASIS. Sir Hans Sloane likewise mentions several instances of this nature,—one that of a brewer who voided long hairs from the urethra, without the attachment of little or any calculous matter. In vol. xii. of the “Philos. Trans.” Mr Powell relates a similar case in a lady. In several of these cases it has been surmised that the hairs grew from calculi in the bladder, from the fact that resistance had been offered to their extraction in cases where they suspended from the urethra. These, cases, it need not be observed, are extremely rare, but the possibility of their occurrence should be known, as when least anticipated the curiosities of medical or surgical practice not unfrequently turn up. Should the presence of any such source of irritation be suspected, frequent washing of the bladder, possibly with some antiseptic preparation, will yield the best results.

With respect to diet, it may be laid down as a general

rule that any diet calculated to surcharge the urine with solid matter, irritate the kidney, or stimulate it to preternatural secretion, should be avoided. Consequently the diet should be plain, solid, and nutritious, making up in quality what is wanting in quantity, due care being taken that a tendency to an excessive formation of oxalic or uric acid be prevented by the judicious blending of vegetable with the animal portions of the food. Ardent spirits are, in my experience, injurious, as likewise malt liquors, and for the obvious reason that their contained alcohol paralyses the sympathetic centres, causes visceral congestion, and diuresis.

That species of incontinence which is associated with affections of the spinal cord, and which is more frequently seen in patients who have resided in tropical climates, is less amenable to treatment, and must be treated according to the indications of the existing case in hand.

As in the case of enuresis the pathological conditions existing in cases of real spermatic incontinence, differentiate themselves into phlegmasia, with its attendant hyperæsthesia on the one hand, and relaxation from nervous exhaustion, chiefly motor, with or without atrophy, on the other.

Having satisfied ourselves in the cases under consideration, that spermatic incontinence actually occurs to such an extent as to constitute a pathological state, we naturally proceed to investigate its cause. It will be the duty of the physician to inquire into the habits of his patient. Should the practice of masturbation be indulged in, it will be obviously futile to resort to remedial measures until it be discontinued, and this it need scarcely be remarked lies with the patient him-

self. It is a mistake to suppose that this pernicious practice is confined to youth; as men at the middle periods of life have confessed to me an unfortunate propensity to its indulgence, particularly under the influence of drink. In cases in which an almost irresistible propensity to it occurs, the penis must be freely blistered, so that the habit may be broken off; and moral means must necessarily be conjoined with the surgical treatment.

But if the exciting cause have been abandoned, and the emissions still persist to an injurious extent, an examination of the urethra should be instituted. For this purpose a catheter or bougie is passed, when in the large majority of cases, intense prostatic hyperæsthesia is found to exist. In the remaining proportion of cases the irritation is not so acute; or little or no pain is felt, and we infer the existence of some other cause, or that a relaxed condition of the prostate has supervened upon the long continued irritation. This is peculiarly characteristic of chronic, and more aggravated cases, and is most likely to be accompanied with diurnal pollutions. These conditions satisfactorily proved to exist, the indications of treatment are obvious, viz., to allay irritation, and restore their pristine tone to the affected parts. In the cases of extreme prostatic irritation, there unquestionably exists the condition we denominate inflammatory. There is more or less congestion of the prostate, probably effusion of fibrine in the gland and consequent enlargement; and ample experience has shown that the physiological effect we call into operation by the process of blistering, is the most efficacious for the removal of such states; and it is also admitted that blistering is more efficacious applied to,

than remotely from the affected part. But the prostate is beyond the reach of blistering in the ordinary acceptation of the term, and we consequently resort to the introduction of a convenient agent into the urethra for this purpose. Reasoning from analogy, it was inferred from the beneficial effect of nitrate of silver in chronic conjunctivitis, that it might with equal benefit be employed in like conditions of the prostate, and hence its general adoption for this purpose. Its introduction is due to Lallemand, and confessedly not a little diversity of opinion still exists as to its efficacy, or propriety as thus employed. Like every other novelty, it is undoubted that cauterisation of the prostate has been pushed by its advocates to a mischievous extent. That its injudicious and reckless employment has frequently laid the foundation of stricture of the urethra, has been incontestably shown by Mr Courtenay and others. But it does not follow, granting even these consequences, that in certain cases its judicious employment is not to be enjoined. This question must therefore be left to the judgment of the medical attendant.

The following case in point may be quoted. So long ago as October 1837,\* Mr James Douglas, lecturer on

\* As I am not aware that the paper of this accomplished surgeon was ever printed, it may be interesting to present an outline of it in this place, taken from Mr Douglas's manuscript. The paper is entitled, "On Spermatorrhœa or Involuntary Seminal Emissions, by James Douglas, A.M., Member of the Faculty of Physicians and Surgeons of Glasgow, and Lecturer on Anatomy," and bears date 1837. Mr Douglas begins his subject, just as the evils rampant in our midst compel one to refer to the subject at present.

"The subject of profuse seminal evacuations, is one which has too little occupied the attention of medical practitioners, partly from a false delicacy, deterring them from its investigation, and partly from a fear of identifying themselves with those shameless quacks, whose puffs disfigure so disgracefully so many columns of our advertising papers. That there is such a disease the

anatomy in the Portland School of Medicine, Glasgow, read a paper before the Glasgow Medical Society, on spermatorrhoea, giving an account of Lallemand's opinions, and the history of a case which occurred to himself. The patient, who was a medical man, was so impressed with the truth of M. Lallemand's doctrine,

existence of these quack lucubrations sufficiently proves ; and that the unhappy sufferers are too often tempted to seek from their authors that relief which has not been obtained elsewhere, is sufficiently evident from their extensive circulation, and the offensive way in which they are constantly obtruded upon the public eye. Why then should the regular surgeon or physician hesitate to make himself acquainted with the symptoms, causes, and pathology of this disease, and give his patients the benefit of rational treatment founded upon this knowledge, instead of abandoning them to the misdirected efforts of unprincipled empirics ?

"It has been long well-known that indulgence in venereal excesses produces direct debility, both from the actual abstraction of the seminal fluid, and from the nervous exhaustion following the excitement of ejaculation. It has also been known that when emissions have been excited by masturbation, the effects have been much more serious, partly from the unnatural way in which the excitement has been applied, and partly from the age of the subjects who have been addicted to it, enabling them less easily to bear the shock produced upon the nervous system. It has been long known too that such habitual irritation of the genital system has caused spontaneous erections and emissions during sleep, which tended much to the weakening of the unfortunate subject ; but only lately has attention been called to the fact, that it may induce frequent evacuations of semen along with the urine, or when at stool to such an extent as to destroy completely, and even to compromise the life. Slight hints of the nature of this disease are to be found in the writings of Hippocrates and of several other practitioners in later periods, under the name of *Tabes Dorsalis*, but the absurd notion of a wasting of the spinal marrow led to an erroneous mode of treatment, and rendered the curative effects ineffectual.

"Wickman, a German, published a small tract about twenty years ago, which attracted scarcely any notice, and it was left for the celebrated Lallemand of Montpellier to investigate its nature with accuracy, and to plan its cure with success.

"About eighteen months ago, I observed in the '*Revue Medicale*' a notice of Lallemand's book, '*Des Pertes Seminales Involontaires*,' then just published, and was struck with a description of a malady of which I had never heard before. I recommended the work for the Faculty Library. I very soon had occasion to discover the symptoms of the disease in a very intimate friend, a medical man, whose case I watched for some months, and who this summer

that he visited Montpellier, and was operated on by Lallemand himself. By this operation he was greatly benefited, the discharge from which he suffered having become much less frequent. He persuaded Mr Douglas some months afterwards to repeat the operation, which he did, when renewed improvement ensued, although

visited Montpellier, and was treated by the Professor himself. . . . . The essential of the spermatorrhœa then is, the evacuation of the seminal fluid frequently, involuntarily, and even unconsciously, without erection or pleasurable feeling; the *vesiculæ seminales* acting in concert with the bladder on the one hand, and the rectum on the other. The proximate cause of their contraction may be actual inflammation or ulceration of the orifices of the *vasa deferentia*, inflammation, or an irritable state of the mucous membrane of the prostatic portion of the urethra, or neck of the bladder, or a similar state of the mucous membrane of the rectum, aided by the direct pressure of hardened fœces. The more remote causes are more varied. Thus the urethral irritation may depend on venereal excesses, masturbation, repeated gonorrhœas, and stricture, and in most cases the history of the patient leads back to some of these, occasionally of pretty ancient date. Sometimes it may depend on sudden and severe exposure to cold, and sometimes on the co-existence or retrocession of cutaneous diseases. The irritation of the rectum again producing violent contractions which are readily communicated to the vesiculæ lying in front of the gut, may depend on constipation, hæmorrhoids, mechanical obstruction, or even on the presence of ascarides.

"The symptoms which really constitute the disease are frequently unobserved by the patient; and the medical man is consulted on account of symptoms denoting indigestion, derangement of the liver, hypochondriasis, or even serious affections of the brain. This last simulation appears to be the most common, and indeed Lallemand declares that most of the patients in whom he recognised diurnal pollutions were recommended to him for advice on supposed cerebral diseases, on account of the celebrity he had obtained by the publication of his work, 'On the Pathology of the Brain and its Dependencies.'

"The patient generally appears exceedingly feeble and emaciated, his skin dry, wrinkled, and dirty-looking, his colour gone, his eyes dull, sunken, and surrounded by a dark areola, while his manner and address imply great anxiety. He complains, probably, of derangement of the stomach and bowels, inability to take strong food or drink, habitual constipation, and distension of the bowels with flatus. He informs you that coitus has become impossible with him, erections being very rare and imperfect, and the semen being almost immediately expelled. His mind broods constantly over his malady, he becomes peevish and morose, flies from society, and falls into a deep melancholy. He complains finally of mental weakness, inability to direct his thoughts, loss of

Mr Douglas adds, the discharges have never entirely ceased. Mr Douglas, in this paper, further advised the injection of opium and acetate of lead into the back part of the urethra.

The solid caustic is to be recommended only in the most aggravated cases of spermatic incontinence; and just as they are removed from this condition, nitrate of silver in solution, of varying strength, may be applied to the prostate by means of a prostatic syringe. Yet in a considerable number of cases even these measures are not demanded, it being sufficient simply to pass a bougie or catheter at given intervals. This treatment is to be employed in those cases where hyperæsthesia alone is believed to be the *origo mali*.

It must be remarked that too frequent repetition of the caustic is apt to defeat the end aimed at, for as Civiale remarks, it may stimulate the testicle to increased secretion, and even prevent the power of erection. "J'avais déjà observé que des malades soumis à l'emploi prolongé du caustique, perdaient la faculté d'entrer un erection."

The *modus medendi* of the caustic solution is analogous to what happens in cases of enuresis when stimulants of the sympathetic are administered. The minute vessels are contracted by an impression of a

memory, ringing in his ears, dazzling of the eyes, and *muscæ volitantes*, fainting fits, and flowings of blood to the head, resembling apoplexy, but differing from it, not being benefited by measures of depletion."

Mr Douglas then proceeds to the consideration of treatment, and after general remarks recommends Lallemand's method. He quotes cases from Lallemand's book, illustrating the efficacy of the treatment. The most interesting case in the paper, however, is that of his medical friend W. C., aged 28, who markedly improved under the treatment of caustic. The account is given by the patient himself, and possesses more interest, inasmuch as it is the case of an intelligent medical man.



stimulating nature upon their nerves, and abnormal sensibility is consequently diminished. Hence the agents which are given in the sthenic form of enuresis are equally applicable in the cases under consideration. Chloral hydrate is therefore given with benefit in spermatic incontinence.

Dr Bradbury, of Cambridge, referring to this subject, remarks—"Whenever, therefore, there is reason to believe that nocturnal urinary and seminal incontinence are due to spasm (not the result of reflex irritation reflected from a fissured anus, worms, urinary calculi, congenital phimosis, or of structural disease of the walls of the bladder, &c.), hydrate of chloral will be found a most serviceable drug in their treatment, in consequence of the acknowledged efficacy of this drug in allaying spasm, as observed in tetanus and other spasmodic disorders." My belief is that no abnormal spasm ever takes place without some primary irritation. Is there no irritation in tetanus? Does the removal of the testicles in certain cases of epilepsy, by the improvement that ensues, not indicate the removal of at least a factor in the production of the disease? Is epilepsy not sometimes ascribed to masturbation? Is hysteria not associated with peripheral irritation?

Digitalis is used in France as an anaphrodisiac. It diminishes seminal secretion. This accords with its therapeutic property of stimulating the sympathetic (fibres of Remak). The employment of camphor for a similar purpose is a custom of great antiquity. It was an axiom at the school of Salernum, "*Camphora pernares castrat odores mares.*" Camphor may be beneficially combined with hyoscyamus and belladonna, both

agents which act as anaphrodisiacs, in the manner indicated.

Bromide of camphor ( $C_{10}H_{16}OBr$ ) promises to rank among the most valuable of the medicinal agents of this class. Attention was first directed to it by M. Deneffe (de Gand)\* as an excellent sedative of the nervous system. It has been successfully used by Hammond of New York in hysteria; Deneffe has found it beneficial in delirium tremens; Charcot, at the Salpêtrière, has had good results from its employment. It diminishes temperature by acting on the minute vessels, as the other agents of this class, and its use is thus indicated in nocturnal enuresis and seminal incontinence. It may be given in doses of from two to five grains in form of pill, with a simple excipient, or in combination with belladonna or hyoscyamus. It has been used by subcutaneous injection. For this purpose the following formula may be followed:—Monobromide of camphor, 3 grammes; alcohol, 35 grammes; glycerine, 22 grammes.

The preparations of lead have been given in the treatment of the affection at issue. Their use is to be reprehended. Fredric Hoffmann cites the case of a young man who had recourse to acetate of lead to arrest nocturnal pollutions, and who died after fifteen days of anguish, from an obstinate constipation thus induced which nothing was able to remedy. Nitrate of potash is not beneficial. Large doses are apt to cause suppression of urine.

Bromide of potassium, which is held in high repute as an anaphrodisiac, and unquestionably exercises a

\* Du Camphore Monobromé et de ses applications a la Therapeutique Médicale. (Press. Méd. Belg. 1871, p. 405.)

powerfully sedative influence over the genital organs, is specially indicated when the emissions are supposed to depend on conditions of the spinal cord or brain.

Phosphorus has likewise been recommended, on the theoretical presumption that there may exist defective nutrition of the nervous system. I have known it disagree with the stomach so as seriously to interfere with digestion. It may be tried, however, in the form of pill made up with crumb of bread, in doses of from gr.  $\frac{1}{2}$  to gr. j. The following is Magendie's formula for its administration:—

R.	Phosphorus, ʒj
	Olei Amygd. Dul., ʒij
Sig.	Solve.
Sumat M. x.—xxx.	

I am in the habit of prescribing bromide of iron, and I have seen much benefit result from its use. It may be given in doses, beginning from five to ten grains, made into pill with extract of eucalyptus globulus.

Lupulin has been strongly recommended by Sigmund of Vienna. It may form a convenient and useful excipient for a pill.

In the opposite class of cases, where there is nervous exhaustion and muscular relaxation, there are few agents which possess such a powerfully tonic influence over the genital organs as the old tincture of steel. In the following case, where the patient was entangled in the meshes of a London charlatan, the benefit was most marked:—

Dec. 28th, 1867, patient writes:—"I have emissions almost every night; sometimes twice a night. It is about two years since I suffered from them." Patient had been addicted to masturbation, which, however,

he had at this time abandoned. I put him under the above treatment, advising that the dose of the tincture of steel should be increased gradually to ninety drops thrice daily. On the 28th March he writes—"I have had only one emission during the last thirty-three days. I am at 120 drops (of the tincture) now, and am quite cheerful at present."

It may be observed with respect to the employment of the tincture of steel as a genito-urinary tonic, that the dose as usually prescribed is much too small. Where smaller doses have failed, I have seen such large doses as the above productive of benefit. Of course it is not to be given in a concentrated form; and it must be sufficiently diluted with water. It is well to use precautions against the effect on the teeth, such as sucking the fluid through a glass tube, &c.; and again, though at the commencement, constipation, which may be obviated however by the administration of an ordinary aperient pill, is apt to happen, when the system becomes saturated with the tincture, the bowels become rather loose than confined, and the flow of urine is much augmented. Theoretically it has been urged that large doses of tincture of steel are useless, as so much of it passes off by the bowels. This theory is assuredly not borne out by practical experience.

Strychnine as a nervine (motor) tonic is highly beneficial. It may be judiciously combined with the tincture of steel. From its action in the uterus, it has been inferred that ergot of rye would similarly influence its analogue in the male. The inference is confirmed by the result of its administration in these cases. I have seen unquestionable benefit from its use. Of the use of *copaiba* and *cubeb*s in this affection I have no experience.

As seminal emissions so frequently take place when the patient is lying on the back—congestion of the cord being thus induced—certain mechanical means have been devised to prevent the patient's so sleeping. Contrivances have also been resorted to to cause the patient to waken coincidently with the accession of erection of the penis. A leather ring armed with sharp points, and encircling the penis, so that on its enlarging the organ may be pricked, has been thus used. The procedure is unscientific, and of most questionable utility.

It is remarkable to what an extent mental impressions may exercise a curative influence, and how sematic disturbance, primarily due to psychical causes, may be removed by antagonistic impressions of the latter nature.

In his highly interesting work "On the Intellectual Powers," Dr Abercrombie relates that Dr Reid cured himself in like manner of a tendency to frightful dreams, with which he had been annoyed from his early years. He did so by endeavouring to fix strongly on his mind the impression that all such dangers in dreams are purely imaginary, and determined whenever, in a dream, he found himself on the brink of a precipice, to throw himself over, and so dissipate the vision. By persevering in this method, it is alleged that for nearly forty years he was never sensible of dreaming.

Tissot makes a similar observation. He remarks, "*Comme l'habitude a ici une très-grande influence, et qu'il importe de la rompre, l'observation suivante pourra fournir un moyen d'y réussir. Je la tiens d'un Italien, respectable par ses vertus, et l'un des plus excellents*

hommes que je me rappelle d'avoir vus. Il me consultait pour une maladie très différente : mais afin de mieux m'instruire, il me fit toute l'histoire de sa santé. Il avait été incommodé, cinq ans auparavant, de pollutions fréquentes qui l'épuisaient totalement. Il résolut fortement le soir de se réveiller au premier moment où une femme frapperait son imagination, et s'occupa longtemps de cette idée avant que de s'endormir. Le remède eut le plus heureux succès : l'idée du danger, et la volonté de se réveiller, unies étroitement la veille à l'idée d'une femme, se produisirent, au milieu du sommeil, en même temps que cette dernière ; il se réveilla à temps, et cette précaution, réitérée pendant quelques soirs, dissipa le mal." By a strong resolution of the will the patient thus wakened in time to prevent seminal emission, and thus the habit was ultimately overcome.

When there is a tendency to self-pollution during sleep, the penis should be blistered.

Sedative suppositories, such as belladonna and opium, may be beneficially employed in some cases.

The perineum may in obstinate cases be blistered.

The very extreme measure of transfixing the prostate by means of accucumpture needles is one which cannot be sufficiently reprobated.\*

In cases of very tight prepuce, or congenital phimosis, the propriety of resorting to the operation of circumcision cannot be too strongly recommended. If

\* The first reference to accucumpture occurs in Ovid's writings:—

Num mea Thessalico languent devota veneno  
Corpora ? Num misero carmen et herba nocent ?  
Sagave Puniceâ defixit nomina cerâ,  
Et medium tenues in jecur egit acus ?

(*Amores*, lib. iii. eleg. 7.)

at the juncture of the mucous membrane with the skin the foreskin is thick or gristly, circumcision proper is advisable. To accomplish this, the foreskin is drawn slightly out, grasped in an ordinary dressing forceps, and removed with one sweep of the bistoury. Care must be taken not to remove too much, as the prepuce retracts greatly. The cut surface should be drawn together to facilitate adhesion. There are other methods of removing preputial irritation—modifications of circumcision—such as slitting the prepuce on its upper surface, forcible dilatation, &c., but perfect circumcision is to be preferred.

*En passant*, the operation of circumcision is one of great antiquity, and whose performance is attended with many beneficial consequences. Thus, it has been clearly shown that among the Jews, who perform this operation as a religious rite, venereal diseases are much less frequently witnessed than among individuals with long prepuces. Circumcision was not originally performed as a sacred rite. Its commencement with the Jews originated unquestionably with Abraham; and Marsham is of opinion that the Hebrews borrowed the practice from the Egyptians. Among the Jews it was performed on the eighth day, with the Egyptians not until the thirteenth year, and then *on girls*,\* as well as on boys! In Otaheite it is performed by slitting the prepuce on its upper aspect. Herodotus (book ii. c. 104) refers to the operation in the following terms:—“The inhabitants of Colchos, Egypt, and Ethiopia are the only people who from time immemorial have used

\* What this circumcision on girls be I cannot divine, unless it be the barbarous operation practised by the Nubian women on young girls. For a brief account of it *vide* “Lancet,” August 10, 1867.

circumcision. The Phœnicians and the Syrians of Palestine acknowledge that they borrowed the custom from Egypt. Those Syrians who live near the river Thermodon and Parthenius, and their neighbours the Macrones, confess that they learned it—and that, too, recently—from the Colchians. These are the only people who use circumcision, and who use it precisely like the Egyptians. As this practice can be traced both in Egypt and Ethiopia to the remotest antiquity, it is not possible to say who first introduced it. The Egyptians certainly communicated it to the other nations by means of their commercial intercourse. The Phœnicians, who are connected with Greece, do not any longer imitate the Egyptians in this particular, their male children not being circumcised.” Again, Gregory the Abyssinian priest remarks, “*infantes circumcidunt ob consuetudinem non ob Judaismum.*” Of the great antiquity of the operation there cannot therefore be a doubt, and it is very questionable whether it does not constitute one of the good ancient customs unfortunately become obsolete.

Galvanism has also its advocates in the treatment of spermatic incontinence, and upon the well-founded belief in its efficacy is based the imposition which takes the form of the “The Self-adjusting Curative Belt,” which is so extensively advertised in metropolitan and provincial journals. It is hardly necessary to observe that these belts are simply an imposition.

With respect to the employment of galvanism, it has been found that the induction current is of little use, while the constant current is highly beneficial. It should be transmitted along the vertebral column for one or two minutes, and repeated twice or thrice weekly.



In other cases faradisation may be practised by means of an urethral and a rectal exciter. The constant current has been successfully employed also, by means of an isolated urethral exciter (positive), the circuit being closed on the thigh. This may be practised for five minutes.

We come now to the delicate and vexed question of sexual congress as a remedy for spermatic incontinence—a question the discussion of which, and the physiological issues involved therein, are apt to end in serious conflict with social ethics. There is nothing easier than to hound down an individual who, following the guidance of truth and sincerity, is led to form opinions possibly at variance with those of the multitude; or an unmanly reticence on the part of others. The vulgarity of so doing is on a par with its facility. How often is conventional “respectability” the mask of the cheat! And does not the experience of the most observant of mankind amply testify that religious parade and personal integrity, in every relation of life, are almost invariably in an inverse ratio? With respect to the difficult subject which now presents for discussion, there is a class of men who seem to think it a duty, at whatever sacrifice, to reconcile physiology and conventionality. Respecting as I do, in common with most others, the endeavours of these amiable individuals, I must assert that, as physicians and physiologists, we have *nothing whatever to do* with so-called morality, and should not allow ourselves to be diverted from an honest examination of this subject in the interests of truth, the light of physiology, and the equally sacred claims of science.

If morality conflict with physiology, I apprehend

that the fault rests with the former and not the latter.

That in the treatment of spermatic incontinence, sexual congress has been recommended by Lallemand, Benjamin Philips, Erichsen, and many others, constitutes a claim to an impartial examination of the subject. It is true that in certain countries the subject involves grave moral considerations; but morality is not a thing on which all nations think alike.\* Simple fornication, for instance, is not regarded as sinful by even the Greek Church, not to speak of customs that obtain elsewhere.

It will be conceded in the first place, at least, I maintain and believe, that there is such a thing as sexual appetite or instinct in the properly organised human being. The other senses are called into exercise by external impressions, such as light, odour, sound, &c.; the one under consideration, like hunger and thirst, is prompted by an internal excitation, viz., venereal desire.

Am I singular in this belief, as some of the critics of my former work would seem to regard me? Cicero

\* The subjoined differentiation of crime, in an age of refinement, might not be accepted in more barbarous times:—

“ Dwell not in thy memory  
The words wherein thy ethic page describes  
Three dispositions adverse to Heaven's will—  
Incontinence, malice, and mad brutishness,  
And how incontinence the least offends  
God, and least guilt occurs? If well thou note  
This judgment, and remember who they are,  
Without these walls to vain repentance doomed,  
Thou shalt discern why they apart are plac'd  
From these fell spirits, and less dreadful pours  
Justice divine on them its vengeance down.” - *Dante*.

“ Μετα δὲ ταῦτα λεκτέον ἄλλην ποιησαμένους ἀρχὴν, ὅτι τῶν περὶ τὰ ἥθη φευκτῶν τρία ἐστὶν εἶδη, κακία, ἀκρασία, θηριότης.”—*Aristotle's Ethics*.

remarks—"Motus animorum duplicis sunt; alteri, cognitionis; alteri, appetitus. Cognitatio in vero exquirendo maxime versatur; appetitus impellit ad agendum." But Cicero may be called a heathen, and his testimony held in corresponding esteem!

"Our appetites," says Dugald Stewart, "are three in number—hunger, thirst, and the appetite of sex. Of these, two were intended for the preservation of the individual, the third for the continuance of the species, and without them reason would have been insufficient for these important purposes. . . . Our appetites can with no propriety be called selfish, for they are directed to their respective objects as ultimate ends; and they must all have operated, in the first instance, prior to any experience of the pleasure arising from their gratification. . . . Our occasional propensities to action and to repose are in many respects analogous to our appetites." "According to the old Hebrew narrative," says Strauss, "Adam and Eve when still in Paradise were also to beget children and multiply; but this, according to the fathers of the Church, was to be without desire or gratification, in which case mankind must have died out, even as it would starve, if eating were not pleasant nor hunger painful. . . . These sensuous impulses lie in the normal disposition of human nature, because, in fact, they are comprised within the laws of animal life to which man belongs. Only that with man they should not, as with the brute, constitute the whole of the stimulus, but be humanly ennobled."

Like all the other appetites, the power of the sexual appetite varies in different individuals. "It is well known" (Ed. "Lancet," Nov. 11, 1871) "to be especially powerful in large classes who are called religious,

but whose religion consists in submission to excited feelings, rather than a striving after purity and holiness of life. It has been very active in many men of great experience and of the highest reason, and seems, indeed, to bear some relation to the general force and vigour of the nervous system. It is quite true that men and women are under no necessity of sinning, and here and there a few may entirely control even strong sexual passions; but, as a matter of fact, the great majority of men do not so control them, and large numbers of continent women,\* both widows and unmarried, suffer seriously in health from the forced suppression of an important function."

Schenck speaks of a lady of twenty-five, who observing a vigorous continence, fell into a state of mental alienation; she roamed the fields and forests soliciting the peasants to have intercourse with her. A peasant, it is alleged, acceded to her solicitations, and her health became perfectly established. Esquirol relates cases of a similar nature.

*Physiological Relation of Continence and Incontinence.*—Having arrived at the conclusion that there is such a thing as the sexual instinct, the question presents, whether is it or is it not conducive to the well-being of the individual that its gratification be indulged in? *A priori* argument and analogy would decide in favour of the affirmative answer; it may

\* Professor Frank of Vienna relates the case of a lady of his acquaintance, of a warm and amorous constitution, who was unfortunately married to a very debilitated and impotent man, and who, although she often betrayed unawares, by her looks and gestures, the secret fire that consumed her, yet, from a strong moral principle, resisted all criminal gratification. After a long struggle her health at length gave way; a slow fever seized her, and released her from her suffering.

confidently be asserted, that the moderate gratification of all natural appetites is conducive to bodily and mental sanity, and while it is equally true that all our appetites are liable to *education*, the tendency to excess of every description so liable to be produced by indulgence is to be guarded against by that faculty of mind, to which the term manliness applies in its best and widest sense.\*

We premise our examination of the argument, for and against continence, first by disposing of premature excesses, in giving our unqualified adherence to the opinion that sexual excitation before puberty, and even during early puberty, is fraught with the worst consequences.

Of the immediate effects of coitus, Feuchtersleben makes the following remarks:—"The act of coition itself has a decided psychical effect. If exercised with moderation at full maturity, and at the right moment, it leaves (notwithstanding the *omne animal post coitum triste*), a pleasurable feeling. Nay, it invigorates the powers of thought, as shown by the example of the ingenious voluptuary Cassanova, who at such moments solved the most difficult mathematical problems. If not gratified when urgent desire exists, it may indeed occasion psychical uneasiness, and especially distract the attention."

Another argument adduced in favour of sexual con-

\* Omnia siquidem animalia, cupidinis æstro percita, ferociunt; et nisi se invicem fruantur, plurimum tandem a consuetis moribus recedunt. Ita mulieres quædam insaniunt præ desiderio consuescendi cum viris; et in nonnullis usque adeo sævit hoc malum; ut vel veneficio afflatur, vel sideratæ, aut a cacodæmone obsessæ judicentur. Idque sæpius contingeret, nisi proba educatio, bonæ famæ reverentia, et innata huic sexui verucundia, inordinatos hosce animi impetus compescerent.—*Harvey*.

gress is, that it is a law of our organisation that if any organ of the body is not functionally exercised, it wastes; and hence it has been alleged that in continent individuals atrophy of the testicles and impotence are apt to occur. On the other hand, it is asserted that the testicles, like the mammæ, may remain functionally quiescent, and be roused to action as circumstances may determine.

The former of these opinions is maintained by writers of unimpeachable respectability. Thus Civiale contends, that it is with the sexual organs, as it is with the other organs of the body, that exercise strengthens them, that inaction enervates them, that excess weakens them and ultimately destroys their functional power. This, he contends, is illustrated by daily experience; and he deduces therefrom the conclusion, that it is necessary, in functional derangements, to endeavour to regulate the perverted function. When the organs have become enfeebled, and fatigued by abuse, repose becomes the first requisite; after that the most natural excitation is the exercise of the sexual function, but moderated, and graduated in proportion to what remains of energy. Hence it is essential, from this point of view, in the first place, to determine the actual condition of the organs.\* Sanctorius maintains that coitus is useful when solicited by nature; but when excitation is from the imagination, that it enfeebles all the mental faculties, especially that of memory. It is easy to understand why. In the state of health, he contends, that the sexual instinct is inspired only when the *vesiculæ seminales* are distended with properly matured seminal fluid, and that then its evacuation is not followed by bodily enfeeble-

\* Quoted by Tissot.

ment. But such is the organisation of the genital parts, that their activity is roused not only by the presence of semen, but, as we have already seen, by mental impressions ; when so produced, seminal emission is more hurtful, even as it is less necessary.

Thirst and hunger indicate the necessity of taking food and drink ; if more is taken than the want seems to indicate, the surplus enfeebles the body ; so it is with the sexual appetite. The necessity of defæcation and micturition is presented to the mind by certain physical phenomena, but perverted habit is able so to modify the organic constitution of the organs, that the urgency of the function ceases to be dependent on the quantity of the excreta. This is the case with masturbators. It is the imagination, the habit, and not a natural appetite, which impels them. The irritation, as we have seen, prematurely stimulates seminal secretion. Rouband remarks, that the genital sense, as all other functions of the economy, is intended to fulfil a mission, which, save in some exceptional cases, it is impossible to control without evil consequences. There can be no doubt that protracted continence is attended with deep gnawing pain, and swelling of the testicles, in certain cases.

Now, are we bound to concede that in continent individuals the function of the testicles is thus abrogated, and that necessarily atrophy of the organs takes place ? I think not. Galen, it is true, had remarked that the singers and athletes of his time, who observed chastity, had their genital parts *exilia et rugosa* as those of old men. One of his friends, he remarks, came to consult him on account of an obstinate priapism, in consequence of a prolonged continence, and was struck with

the fact that athletes were in an opposite condition. "*Miror, inquit, quod, hinc (athletum indicans) ob continentiam rugosus, collapsusque penis evaserit. Mihi vero ex quo continentiam servare studui, evenerit contrarium.*" Galen adds, that those who in youth abandoned themselves to sexual pleasures\* had the genital parts abnormally developed. The question is one on which, I think, it impossible to formulate a law. Possibly in some cases, as the highest authorities do testify, continence has caused impotency and atrophy of the genitals. It may likewise be true that moderate exercise of the genitals develops and strengthens them; but it by no means follows, I think, that continence is attended with functional inactivity and atrophy, as a rule. My own experience indicates quite the contrary. Of course, in these cases in which continence has been observed until late in life,† comparatively speaking, the function of the testicle continues to be interruptedly performed, as we have already inferred. On the other hand, the analogy between the testes and the mammæ cannot be admitted; the testes are the analogues of the ovaries, and corresponding physiologically we naturally infer a functional correspondence, and this really obtains. With or without sexual con-

\* Mr Wilson (On the Urinary and Genital Organs) mentions the case of a man of twenty-six years or age, in whom the penis and testes remained the same size as in childhood. At this age he married, and at twenty-eight the organs had reached their natural size. Roubaud mentions a similar case.

† Dr Gall remarked in his Lectures that such clergymen of the Roman Catholic Church as were considered in the odour of sanctity, were remarkable for atrophy of the genital organs. Buffon remarks, "The natural state of man after puberty is marriage." The ancient Germans did not marry till the twenty-fourth or twenty-fifth year, previous to which they observed the most rigid chastity, and in consequence of which, according to Caesar, they acquired a size and strength which astonished Europe.



gress, ova are discharged with the menstrual fluid every month. The absence of menstruation shows an abnormal condition of the system; continence in the female does not cause amenorrhœa, any more than continence in the male prevents seminal secretion; but preternatural genital irritation in the female will cause menorrhagia, even as the same cause in the male will occasion what I have ventured to term spermorrhagia. The too frequent or too copious flow of the menstrual fluid constitutes a disease; and an excessive discharge of seminal fluid, in the male, must be regarded similarly. The entire absence of either, in either sex, would lead to the supposition that some sexual derangement must exist.

Reverting finally to the articles which appeared in "The Lancet,"\* *apropos* of my letter in the same journal (*vide* Appendix), the following argument against sexual congress, as a cure for spermatic incontinence, as recommended by certain writers, is indulged in:—"Seminal secretion is prompted by the presence of its proper stimulus, and the secretion prompts to the performance of the sexual act. . . . The physiological remedy is the constant presence of the woman; and her occasional presence only increases the evil it was designed to cure." It is implied in these propositions that the presence of the female is the stimulus to seminal secretion, and conversely that in the absence of the female there would be no seminal secretion, and consequently no sexual urgency. Now, we know that this in point of fact is not correct. It must be admitted that in unmarried as well as in married men—in the virtuous as well as in the profligate—secretion of semen proceeds in a normal ratio on the one hand, and preter-

\* "The Lancet," 1870.

naturally, just according to the degree of irritation, psychical or physical by which the testicles are influenced, on the other; and again, that if the presence of semen prompts to the performance of the act, it must do so alike in the married and unmarried, and that continence, as the term implies, cannot be maintained without an effort at the suppression of a normal function, which effort, in the opinion of men of acknowledged eminence, is apt to be attended with psychical as well as bodily disturbance, and *if overcome*, must be relieved by involuntary seminal emission.

Again, the writer in "The Lancet," referring to marital excesses, remarks—"The sexual intercourse which follows legitimately on marriage is not unfrequently pushed to excess; but, even then, the evil works its own cure. In ordinary cases the physiological powers of the husband, and the nature of his employments in life, set from the first their appropriate limits to his indulgence. Nocturnal emissions cease at once [it consists with my knowledge that they occur even with married men]; because they are superseded by the legitimate use of the sexual organs. . . . Now, intercourse with prostitutes, regarded simply as occasional sexual intercourse, has no effect of the kind. A man who cannot marry, and who is worried by emissions, *should endeavour to diminish secretion!* By seeking women occasionally he only increases it, and feeds a craving which grows in proportion as it is fed. . . . Physiology is completely on the same side as morality; and the advice to seek irregular sexual intercourse as a remedy for emissions is altogether unsound in principle, and, if followed, would be unsuccessful in practice."

Now, I designate this an illogical and unphysiological argument; and maintain, without fear of contradiction or dread of difference of opinion, that neither science nor human welfare can ever be advanced by compromising the truth in this manner. Dissected, the philosophy of this compromising physiologist will be found to resolve itself into *the performance or non-performance* of a canonical rite. If in the married state it is alleged "nocturnal emissions cease at once, because they are superseded by the legitimate use of the sexual organs," how does it happen that illicit intercourse simply "feeds a craving which grows in proportion as it is fed?"

Deslandes takes a very different view of it. He contends that coitus, when reduced to its most simple terms (*à ses plus simple termes*), is neither more nor less than an excretion of semen, and causes less injury to the system in proportion as it is attended with diminished excitement. "Aussi le commerce avec les filles publique et généralement femmes qui n'inspirent point de vifs transports, a-t-il généralement des inconveniens moindres, ainsi que l'a remarque Hunter, que celui qui s'accompagne d'une violente passion." Granted that intercourse with prostitutes is only occasional, and that "the physiological remedy is the constant presence of the woman," which by the way *it is not*, what does this amount to? It is admitted that marital excesses occur, "but the evil works its own cure. The physiological powers of the husband, *and the nature of his employment in life (sic)*, set from the first their appropriate limits to his indulgence." It follows that sexual congress can only be of occasional occurrence, to be compatible with health, and if *occasional* intercourse in the married state supersede

nocturnal emissions, why not in the unmarried state? If the presence of the female stimulate the secretion of semen, and seminal plethora prompt the sexual act, how can the physiological remedy be the constant presence of the woman? Again, by a strange perversity of argument, the writer adds, "her occasional presence only increases the evil it was designed to cure." Would "physiology be completely on the side of morality" if her presence were constant, *without* the performance of the matrimonial rite?

Pathological or therapeutical considerations based on such reasoning as this, it need hardly be said, cannot be regarded as meriting intelligent criticism. What is the normal condition of the vesiculæ seminales and testes? It is their normal condition to be full. When in this state, and under the influence of neither mental nor bodily excitement, secretion of semen proceeds very slowly, but it is accelerated according to the degree of either variety of excitement. Augmented thus, seminal plethora occurs, and if the natural appetite which this state creates be not indulged, psychical uneasiness is apt to take place, and involuntary seminal emission to occur.

How might the natural use, then, of the sexual organs supersede nocturnal emission? In the first place, by removing seminal plethora, and, what is not of less consequence, by obviating psychical uneasiness from ungratified passion. Patients who are tormented with nocturnal emissions and cannot marry are seriously advised to diminish seminal secretion! and, to accomplish this result, writers of the nineteenth century have advised them, I can hardly think in earnest, to invoke the aid of religion!

I have never denied, nay, I have maintained, that the diverting of the mind from sexual subjects is calculated to moderate the amount of seminal secretion, and religion may act in this respect just as it influences the particular individual and no further. I do not believe that mere exercise will diminish the amount of seminal secretion, any more than it will diminish any of the other secretions of the body. The writer in "The Lancet" above commented upon remarks—and here I am in harmony with him—"We shall find, in the first place, that the power of physical exertion and of mental application, in a degree sufficient to extinguish animalism, is not a common endowment soon after the age of puberty."

It is amusing to what extremes individuals will go when a pet theory has to be bolstered up. Thus, Lallemand says—"The urgent necessity of recruiting each day, the great waste occasioned by varied progressive gymnastic exercise, diminishes in an equal proportion the secretion of the semen; for the economy only occupies itself with the reproduction of the species when it has provided for the construction of the individual." This novel theory is assuredly more ingenious than correct. It is rather a good example of Lallemand's bad physiology, and the excellent development of his luxuriant fancy. That it is visionary, is clearly shown by the remarkable procreative capacity of patients far advanced in phthisis. Again, by an unfortunate forgetfulness, Lallemand states, that "from the moment that the evolution of the generative organs commences, the testicles, if the texture is not accidentally destroyed, will continue to secrete up to a very advanced age."

There is yet one remedy which is said to have been successfully employed in the treatment of spermatic incontinence; I mean the rectal pessary to which Trousseau refers. He narrates the case of a young Irishman thus cured. I have no experience of this method of cure,—it is, however, recommended on such high authority, that it merits a trial in suitable cases.

In those cases in which psychical states keep up spermatic incontinence, by augmenting seminal secretion, moral treatment must be resorted to, such as interesting reading, change of scene, &c.

“Venus otia amat. Qui finem quaeris amoris,  
Cedit amor rebus; res age, tutus erit.”

As accessory to the more direct medical treatment, much benefit will be derived, in suitable cases, from cold bathing; where circumstances permit, in the sea; and otherwise by means of sponge, or plunge and shower baths at home. The bowels should be kept free, and by suitable diet alone, if possible. Heavy suppers should be avoided; *πόντοι, σιτία, ποτά, ὕπνος, ἀφροδίσια μετρία*. Avoiding soft beds, and early rising, should be inculcated.

In closing the consideration of this portion of my subject, I fervently trust that in endeavouring to avoid Scylla, I have nowhere fallen into Charybdis, and that I have scrupulously followed the behests of truth and science, which must rise paramount to all other considerations! The subject is said to be a disagreeable one. Perhaps so. The question is, Are these diseases human infirmities or are they not? If so, are they, real or imaginary, the instruments of extensive robbery and mental torture, if not insanity, to an enormous extent? Can nothing be done for their

cure ? Have the several issues therein involved not been grossly exaggerated by certain legitimate practitioners ? Can their importance not be differentiated compatibly with the most perfect honour ? Is not our profession outraged, and the low press befouled by vampires, who feed on our culpable negligence or ill-advised silence ? Why should sexual matters in the male be more disagreeable than in the female ? And why should the seal of silence be imposed on legitimate practitioners regarding them ? Simply, I fear, because of a state of things, inseparable from an unequal, and in a preponderate degree, an imperfect education, viz., puerile attempts to reconcile prurient hypocrisy and eternal truth.

## CHAPTER IV.

## STERILITY IN THE MALE.

CONTENTS—Sterility from Congenital Defects and Malformations—from Disease—Sterility from Stricture—from Tubercular Affections of the Testicles—Influence of Disease on Fecundation—Effects of Hydrocele on the Spermatic Function—Sterility from Diminished Reflex Paresis—Epileptic Misemission—Idiopathic Azoospermia.

By the term sterility, in contradistinction to that of impotency, with which it is frequently confounded, is to be understood *procreative incapacity*, and not *sexual* incapacity. These affections, says an accomplished writer,\* “are subjects of greater importance than has been conceived by many, and often involve the happiness and perpetuation of families. Yet have they, by a sort of professional prudery, been either entirely overlooked by medical writers, or very imperfectly discussed, and thereby relinquished to the irregular practitioner, or to the entirely unqualified empiric.”

In order to the possession of procreative capacity in the male, the following are indispensable requisites, viz., power of intromission of the penis, and the discharge into the vagina of properly matured and healthy seminal fluid. Incapacity of erection comes properly under the consideration of impotency, and its discussion must be referred to that section. It is the inability

\* Copland.



*to convey into the vagina healthy semen* that specially constitutes sterility. The causes of this state may be conveniently referred to—1st, Congenital defects and malformation of the generative organs, or either of them; and 2dly, to the effects of disease. Of the congenital defects, the most important are non-descent of the testicles into the scrotum, when the patients are said to be cryptorchids (κρυπτός, hidden, and ὄρχις, a testicle), descent of but one testicle, monorchids (μόνος), cases of hypospadias\* (ὑπό, and σπαδόνισμα, a tearing), and cases of epispadias (ἐπί), atrophy of the testicles. It is still a disputed point whether cryptorchids are absolutely sterile, and we shall briefly consider the evidence both *pro* and *con*. Civiale maintains that cryptorchids are sterile, but that they are not impotent, and, in addition, that they are very lascivious. Until the time of Hunter it was thought that the presence of testicles was not necessary to procreative capacity, as individuals in whom they were wanting not only manifested venereal desire, but begot children. Cabrol\* relates a case of this description. His advice was asked in the case of a young man of twenty-two, as to whether he might marry and would be likely to beget children, or whether his condition did not render him more suited for the service of the Church. Cabrol counselled marriage, and his patient became the father of two children. It was John Hunter's opinion, that when one or both testicles remained through life in the belly, they are exceedingly imperfect, and probably incapable

\* I have seen some excellent specimens of these conditions at the Musée Dupuytren, Paris. In the magnificent Anatomical Museum of Bologna I have examined similar preparations.

† Alphabet Anatomique, p. 87.

of performing their natural functions. In this opinion Hunter is confirmed by the observations of Mr Curling. It is assumed, as a matter of course, in these cases that semen, to be fertile, must contain zoosperms. Mr Curling, in a paper which he read before the Medico-Chirurgical Society of London, in 1863, gave details of two cases of double retained testicles in married men, without children, and other two cases of single retained testicle, the second testicle in one case being completely atrophied, while the other had been removed by operation. In the four cases there was perfect *virility*, though the ejaculated fluid was perfectly destitute of spermatozoa. To these cases Mr Curling added three cases described by Godart, one by Peuch, and one by Mr Partridge, in all of which the fluid ejaculated was destitute of spermatozoa. The particulars of Mr Partridge's case are as follow :—A gentleman, aged thirty-four, had been married eight years to a healthy wife. He had strong sexual desire, and frequent intercourse, but no family. He died of tumour in the groin, which was found after death to have been due to encephaloid disease of a retained testis. The other testis, which was also retained, was of the natural size, but did not contain any spermatozoa. The disease having extended to the bladder, the condition of the vesiculæ was not determined. Mr Partridge was cognizant of another case of retained testes, where intercourse was frequent, but the fluid ejaculated was transparent, and did not contain spermatozoa. In this case, likewise, intercourse was frequent. A like occurrence was observed in another gentleman, aged thirty-four, who had frequent intercourse, and who consulted Mr Partridge as to the propriety of getting married.

A microscopical examination of the fluid in this case also having revealed the absence of spermatozoa, an opinion adverse to his intentions was expressed, on the ground that there would be no offspring. At the meeting at which Mr Curling read his paper, Mr Webster expressed his opinion that sterility was *more frequent in males than in females*. In the horse it has been observed, in like manner, that if the testicles be retained in the abdomen, the animal, though capable of sexual intercourse, is sterile.

Non-descent of the testicles is of such rare occurrence, that Mr Marshall met with but one case of non-descent of one testicle in 1000 recruits, and non-descent of both once in 10,000. There are three preparations of this condition at Guy's; one of them taken from a gentleman, who, from despondency caused by his condition, shot himself.

From such cases as the foregoing, it has been inferred that crypsorchids are necessarily sterile, but other cases are also recorded which do not bear out this opinion. Two cases of fertile crypsorchids occurred in the practice of Mr Cock, late surgeon to Guy's. One of them had been twice married before the age of thirty, and had children by each wife, besides illegitimate children which had been affiliated upon him. Mr Poland relates in Guy's Hospital Reports, the case of a crypsorchid, aged twenty-nine, in whom there was not the slightest trace of a scotum. This man married at twenty; he had two children by his first wife, and at the date of admission into hospital was married a second time.

In 1862 a patient came under Mr Durham at Guy's, in whom the testicles were lodged in the inguinal canal. This man presented no signs of sterility; had

two children by his wife, and since puberty (he was then thirty-two years of age) had been always sexually perfectly competent. A similar case is described by Dr Debron of Orleans. This man had a son by his wife.

It was Hunter's opinion that the testicles retained in the abdomen became atrophied. This opinion has been combated by Owen. At least, that this does not invariably take place, is shown by persons having this malformation having become frequently the fathers of children.

Follin supports Hunter's view in the following manner:—"I have had from a distinguished veterinary surgeon interesting details on the structure of testicles retained in the belly of horses. Beyond alterations in volume, and in the appearance of the structure of the gland, M. Goubaux has remarked that the semen contained in the seminal vesicle, corresponding to the side in which the testicle was retained, contained no spermatozoa. I have in three cases examined the semen contained in the seminal vesicle corresponding to the side in which a testicle was retained in the abdominal ring, and on every occasion I found a complete absence of spermatozoa. On the other hand, spermatozoa existed in the opposite vesicula. In a fourth case, there were spermatozoa on neither side. This was in the case of a man who died of an affection of the nervous centres, of old date. But that which was observed constantly in the liquid, devoid of spermatozoa, was a yellowish fatty matter in round globules, and having some of the properties of fat."\*

Cloquet has found in the abdomen a testicle of equal volume with one which existed in the scrotum. The

\* *Archiv. Gén. de Médecine*, 1854, t. xxvi. p. 264.

case of Sir Astley Cooper's pupil is notorious. In despondency at the evident want of testicles, the young man committed suicide. On *post mortem* examination two testicles, almost normal, were found engaged in the internal abdominal ring. M. Jarjavay\* relates a similar case—"I have seen, he says, this year, at the Charité, a man of fifty-five years of age, in whom the right testicle was not lodged in the scrotum. Just beyond the external orifice of the inguinal canal, it was found above Poupart's aponeurotic arch, towards the middle line. The movements of flexion of the thigh on the abdomen had apparently gradually embedded the gland in the subcutaneous cellular tissue. This testicle was always as large as that in the scrotum." This patient had perfect sexual capacity.

Caspar is of opinion that crypsorchids are perfectly capable of procreation, and he cites a case related by Mahon, in which a most licentious criminal was discovered, on dissection, to be a crypsorchid. He further relates a case of a crypsorchid in whom microscopical examination revealed the presence of spermatozoa. This was the case of a boy fourteen and a half years old, who had been guilty of unnatural conduct towards a boy eight years of age. Sixteen days after the criminal assault, Caspar discovered the spermatozoa in stains on the boy's shirt. As this is a question on which the physician or surgeon is apt to be consulted at any time, and one which may involve grave medico-legal considerations, it will be apparent that the opinion of Mr Curling could not be substantiated in a court of law, as it is absolutely negatived by the cases just referred to. It certainly does not follow that in cer-

\* *Traite d'Anatomie Chirurgicale*, t. i. p. 276.

tain cases of cryptorchids sterility must exist; and the question of fecundity in suspicious cases can only be determined by microscopical examination of the fluid emitted *in coitu*.

One testicle may be *congenitally absent*. Thus Blandin\* cites a case, where in one side neither testicle, vas deferens, nor seminal vesicle existed. And Velpeau† relates a similar case, in which the spermatic artery and vein were absent in like manner. If this malformation be confined to the one side, it need hardly be remarked, it does not necessarily impair the power of fecundation.

Congenital absence of two testicles would necessarily cause impotency. This condition would be indicated by feminine characteristics, and the absence of spermatozoa in the fluid emitted *in coitu*, if impotency did not exist.

Monorchids, it need scarcely be remarked, are not necessarily sterile. The condition termed hypospadia, in which the urethra opens by a slit on the under surface of the penis, in some situation between the glans and the perineum, is, in its aggravated forms, an extremely rare condition. Epispadia, the corresponding condition on the upper surface, is still more rare. The aperture may be situated near or at a distance from the glans, and may consist of a mere slit, or involve part, or all the urethra. When the latter condition exists, it is usually complicated with eversion of the bladder, and approaches the condition of hermaphroditism. With respect to the procreative power of hypospadias and epispadias, it will be obvious that

\* Anatomie topographique, p. 443.

† Anatomie Chirurgicale, p. 192.

much will depend on the degree to which a departure from the normal condition exists. If the aperture be situated near the glans, this condition is of no consequence; nay, impregnation seems possible when hypospadias exists to a very extreme degree; and Schenck and Simeon describe cases of hereditary hypospadias. Frank records an instance of the transmission of this deformity to three generations. Hypospadias and epispadias can be regarded as causes of sterility only in cases where the orifice of the urethra is so situated that the seminal fluid cannot be projected into the vaginal canal. In fact, animals may be artificially impregnated. Valentin thus observes—"Coitus is not a necessary condition for impregnation. It is merely an expedient selected by nature for bringing together the two different kinds of germs in many animals. . . . . The rigidity of the organ is not a necessary condition for the ejaculation of semen, or for impregnation. It only materially favours the act of copulation . . . . . since the seminal stream may describe a tolerably large arc, it may force its way into the vagina, though only the point of the glans be introduced between the lips of the vulva, or, if these be separated, in any other manner. And the spontaneous movements of the spermatozoa make it possible for them subsequently to reach the cavity of the uterus through its os."

John Hunter was consulted in a case in which the seminal fluid escaped in the perineum, and having in view the experiments of Spallanzani, he recommended the patient to collect the seminal fluid which thus escaped, and inject it into the vagina. This being done impregnation took place, and a healthy child was born in nine months.

Among the other congenital malformations, there may be complete absence of the vasa deferentia; but this is so rare an occurrence as simply to merit being mentioned. There is yet another singular malformation on whose occurrence Rokitansky throws doubt. I refer to the occurrence of two penes placed side by side.\* Of this malformation there is no doubt. (For an account of a remarkable case of this kind *vide* "Lancet," July 29th, 1865.) The genital functions were perfect.

Foderè saw a young soldier, in whom there was a fleshy excrescence in place of a penis, and in which the ureters terminated. The testicles were normal. Belloc relates a remarkable case in which the ureters terminated at the bottom of the frænum. The subject of the malformation had four children; *two of whom had the same malformation*. Similar cases are related by Zacchias, and Francis of New York. Sometimes the urethra opens by more than one orifice. Fabricius of Hilder refers to a case in such a manner as to convey the idea that two urethræ existed; *De duplici ductu urinario*.† Haller speaks of three openings; *Tria ostia in uno glando*,‡ and Vidal states that he observed a similar circumstance. This condition is simply a variety of hypo- or epispadias, as the apertures may happen to be placed.

Age in its relation to sterility has already been referred to (*vide* Chapter iii.).

STERILITY FROM DISEASED CONDITIONS OF THE REPRODUCTIVE ORGANS.—But semen may be naturally

\* Schenck (Observ. lib. iv. 2, 8) relates the case of a double penis, and also Weikard, Badinger, Mark, and Richerand.

† Observations Chirurgicales.

‡ Elementa Physiologiæ, t. vii. lib. xxvii. p. 470.



formed, and sterility be occasioned by obstruction to its communication with the vesiculæ and urethra. Thus, in cases of gonorrhœal epididymitis the vas deferens may become occluded. And if double, sterility inevitably ensues, while this condition lasts, though in such cases fluid may be discharged from the prostate and vesiculæ *in coitu*. Semen may be perfectly formed in such cases, but it remains imprisoned. As the result of interesting experiments on dogs, M. Gosselin found that, after ligature of the vas deferens, spermatric secretion persisted for sixteen months; and that the obliteration of the epididymis is capable of being removed. This result, of course, cannot be predicted in all cases.

M. Gosselin has collected seventy cases of this nature. In fifteen, the epididymitis dated from a few weeks to a few months, and in all of them the induration was permanent. There was no modification of the genital functions in any respect whatever, save the absence of spermatozoa. In two cases the spermatozoa reappeared—in the one at the end of eight months, after a second epididymitis, the first occurring six years previously; in the other after six months time, likewise after the appearance of a second epididymitis, the first occurring eleven months before. Of these fifteen cases, thirteen were lost sight of. Of the remaining five, of the twenty, they were cases of double epididymitis. The disease in one had been contracted twenty years before; the induration persisted in the one side but was absent in the other, and the fluid ejaculated therefore contained spermatozoa. In the remaining four the induration persisted, and the spermatric filaments were consequently absent.

In his edition of Curling's work, Gosselin adds five more cases. In two the spermatozoa reappeared after the absence of many months. In a third, where the patient was under observation for three months, the semen contained no spermatozoa. The two remaining were cases of bilateral epididymitis contracted in early youth, and spermatic filaments were absent in the ejaculated fluid. Patients were married for several years, but had no issue. Godart has observed the removal of the induration of the epididymis in cases in which, however, fecundation was not restored. The induration, he asserts, may be seated in the loose cellular tissue surrounding the epididymis, and the commencement of the vas deferens, or it may exist between the coats of the canal itself; rarely, if ever in its interior. Godart believes that the deposition of the phosphate of lime in the convolutions of the epididymis may, by obliterating the vas deferens at its origin, gave rise to spermatocele, the same as if caused by plastic exudation from an inflammatory state of the parts. It is therefore concluded, that while the induration consequent on double epididymitis may be removed, and full procreative powers be restored, in certain other cases the arrest of the function prevents the reappearance of spermatozoa.

According to M. Liegeois, a more favourable prognosis may be formed, with respect to the return of spermatozoa, in non-blenorrhagic than in the epididymitis following gonorrhœa. Of eighty cases of epididymitis, spermatozoa reappeared as follows:—

Gosselin,	25 cases,	5 returns of spermatozoa,		
Godart,	35	„ 1	„	„
Liegeois,	23	„ 2	„	„

It is interesting to notice that, contrary to what obtains in the case of other double organs of the body, an affection of one testicle is apt to react upon the other, and instead of the energy of the sound one being redoubled, the very reverse occurs; even atrophy may ensue.

THE TREATMENT of induration of the epididymis will consist in the inunction of mercurial preparations into the part, and the internal administration of bichloride of mercury with large doses of the iodide of potassium; of which certainly not less than ten grains should be administered thrice daily. Godart, by the aid of purgatives and iodide of potassium, has succeeded in removing these indurations after the lapse of ten years. The most chronic case may, therefore, be taken in hand with the prospect of success.

STERILITY FROM STRICTURE comes properly under this section, and not under impotency, where it is usually placed. This constitutes the *misemissio refluens* of Mason Good, and is a more frequent cause of male sterility than usually supposed. A stricture which offers little or no impediment to the passage of urine, may, in the erect condition of the penis, where the calibre of the canal becomes so much diminished, offer such resistance to the discharge of semen, that it is forced back into the bladder, and becomes mixed with the urine. Deidier relates a case of a somewhat similar nature, in which a fistulous communication existed between the vesiculæ seminales and the rectum. In consequence of this condition, during intercourse, no semen was emitted from the penis, but nearly all passed into the bowel.

The cure of sterility from stricture will necessarily be that of stricture itself; and of the last condition, if ever found to exist, the usual treatment of fistula.

**TUBERCULAR AFFECTIONS OF THE TESTICLES.**—The testicle, in common with so many other glandular structures of the body, is liable to tubercular deposit, occurring more frequently in the epididymis. From this, it is apt to extend backwards to the accessory organs, the vasa deferentia, the vesiculæ, and the prostate. With respect to the bearing of orchitic tubercular deposits on fecundation, different opinions are entertained. Godart is of opinion, that an individual with even one tubercular testicle is barren. In this view, he is supported by Gosselin. Mantegazza likewise details the case of an individual suffering from tubercular softening of the epididymis of one side, in whom no spermatozoa were found in the opposite testicle, though perfectly free from disease. In opposition to the conclusions, borne out by these observers, M. Liegeois narrates the following case:—"A man twenty-eight years old came to me," he remarks, "with a fistulous opening in the left scrotum. The probe introduced here leads to the indurated and deformed epididymis. The affection dates back five or six years. This man, of apparent good constitution, presents none of the signs of pulmonary consumption. His virile faculties have notably diminished since the development of the tumour. His semen, 1·50 gramme, contains from five to ten spermatozoa, under each preparation." This observation proves that the presence of tubercles in one testicle does not abolish the spermatic secretion of the opposite side, but it also shows, that

when this secretion persists, it only does so in relatively small limits.

Even one case invalidates an absolute rule; and while it may more frequently obtain that tubercular deposit in one testicle abrogates the function of the other, it cannot positively be asserted that sterility inevitably follows.

INFLUENCE OF DISEASE ON FECUNDATION.—Godart has found spermatic filaments in the vesicles of patients dead from pneumonia, Bright's disease, gangrene of the lungs, typhoid fever, and peritonitis. Often in cases of individuals who had been ill from pneumonia, variola, pleurisy, and scarlatina, and examined by him, no change whatever was found in the spermatic secretion. It is inferred the azoospermia, in consequence of acute disease, if occurring in early life is only temporary, while it is otherwise in advanced life.

With respect to the influences of chronic diseases on the seminal secretion, very diverse views are likewise entertained. With regard to phthisis pulmonalis, I have myself seen numerous cases, which have impressed me with the conviction, that in these cases fecundation is not impaired; nay, I should say the very reverse.

Godart thinks that in cases of phthisis, occurring at an age corresponding to the establishment of the spermatic secretion, spermatozoa are absent; while he admits that after puberty they are not. He believes, further, with respect to tubercular orchitis, that sterility precedes the development of the local lesion by a year or two.

CANCER, AND OTHER MORBID GROWTHS, may occur

in the testicle, but with these diseases, in the present instance, we are not particularly concerned.

There is yet another circumstance, which in perfectly healthy individuals unquestionably causes azoospermia and consequent sterility, viz., excessive coitus.\* Cases are recorded in which seminal fluid has been examined after a close succession of sexual indulgences, in which the spermatozoa were diminished in proportion to the demands made upon the testicle. It would appear, therefore, that spermatozoa are not secreted as such—at least in the form by which we recognise them—but require a certain time for maturation. This may certainly be a cause of sterility; and hence, Mason Good remarks that “abstinence by consent, for many months, has, however, proved a more frequent remedy than any other, and especially when the intercourse has been so incessantly repeated as to break down the staminal (*sic*) strength; and hence the separation produced by a voyage to India has often proved successful.”

It is from this cause that the *Dysspermatus Serosus* of Sauvages occurs. His definition of it is, “Ejaculatio seminis aquosioris, adeoque ad genesim inepti, quæ species est frequentissimum sterilitatis virilis principium.”

It must be borne in mind that the sterility in many of these cases is relative, as too frequent coition on the part of the female may give rise to an irritable condition of the ovaries and uterus, for contractions of the Fallopian tubes and uterus, from the fundus to the neck, may be excited by irritation of the lower lumbar and first sacral nerves of the spine. This is no doubt the cause of sterility in the majority of prostitutes.

\* *Vide* page 178.

*Effects of Hydrocele in the Spermatic Function.*—M. Lannelongue\* states, as the result of an examination of twenty-three cases of hydrocele, that in five cases no spermatozoa were found in the epididymis or vesiculæ seminales, although the testicles themselves appeared healthy. In 1856 Duplay failed to find spermatozoa in five cases of hydrocele. M. Liègeois published four observations made on living persons between 40 and 50 years old. One had two hydroceles, each as large as a goose's egg; a second had two hydroceles, each as large as a fowl's egg. No spermatozoa were found in the seminal fluid of either. M. Rouland makes the interesting observation, that in a person who had double hydrocele, and whose semen contained no spermatozoa, the spermatozoa reappeared after the operation of puncture had been performed, but again disappeared on the sac refilling.

Atrophy of the testicle may supervene upon inflammation of the organ; and a like result can be produced by pressure, as from hernia, &c.

STERILITY FROM DIMINISHED REFLEX PARESIS. — Sterility from this cause is unquestionably a rare occurrence. I have known one case of diminished reflex paresis, occasioning preternatural postponement of seminal emission. It existed in the case of a patient suffering from *morbis coxæ*, which doubtless in some manner affected the pelvic portion of the nervous system. B. Schulz relates a case, in which a man of twenty-eight years of age could not ejaculate till coitus had been continued for an hour and half! And also a case of aspermatism in a man of twenty-seven, who

\* L'Union Médicale. July 16, 1873.

had never been able to ejaculate during coitus, although he had perfect erections. Seminal emissions occurred during sleep in both cases.

The treatment of such cases must be based on the particular indications presented.

Somewhat akin to the foregoing condition is that to which the old authors applied the term entonic impotency. In this condition ejaculation of semen does not take place during coitus, though seminal emissions may occur during sleep. There is a surexcitation of some portion of the sexual system. Dr Cockburn relates a case of this description. The patient was a Venetian of noble family, who, though married to a fine and healthy young lady, had no seminal emission in the act of sexual congress, notwithstanding that there was vigorous erection, and involuntary seminal discharge during sleep. He was greatly afflicted, as were also his family, by such a misfortune; and failing beneficial treatment at home, the Venetian ambassadors at the different courts of Europe were requested to consult the most eminent physicians in their respective quarters. Under these circumstances, Dr Cockburn was consulted, and divining the condition to be due to excessive plethora of the vessels of the penis, and consequent coarctation of the urethra during coitus, which possibly caused a seminal reflux into the bladder, a condition he surmised not occurring during sleep, he recommended lowering treatment, purgative medicine, slender diet, &c., which were soon followed by the desired issue.

Mason Good relates a case of a somewhat similar nature, which came under his own notice. A young healthy couple were married for seven or eight years



without offspring, at the end of which time the lady became pregnant, and added every year to her family until she had six or seven children. In a professional conversation with Dr Good, the father made it appear that the temporary sterility was due to the cause under consideration. Cases of this nature are of every-day occurrence.

That priapism, by which is to be understood persistent erection due to disease, prevents seminal emission, is known by the fact that in these painful cases, masturbation has been actually resorted to for the removal of the distressing malady, and in vain.

In the cases in which seminal emission does not take place during coitus, the immediate cause is, doubtless, a spasmodic affection of the ejaculatory passages, the prostate, and the perineal muscles. The treatment is sufficiently indicated by this view of their etiology.

EPILEPTIC MISEMISSION occurs when, in persons pre-disposed to epilepsy, or of a very sensitive nervous organisation, a fit is occasioned by sexual congress. It is said of several eminent men that epilepsy was thus induced. Its treatment will essentially be that of epilepsy.\*

\* Sauvages, in his "Nosologia Methodica, seu classes morborum" (p. 230), relates the case of an individual who was for twelve years attacked, in the act of copulation, with a spasm which extended throughout his whole body, with loss of feeling and consciousness:—"Ita ut illum præ oneris impotentia, in alteram lecti partem excutere cogeretur uxor, et evacuatio spermatis lenta flaccidoquè veretro demum succedebat, remittente corporis rigiditate." Tissot states that he knew many analogous cases; and Haller, in his observations on Boerhaave's Institutes, refers to several such cases. *Vide* also Didier, *Quest. Medic. an Epilepis Mercurius vitæ*; Galen, *De locis affectis*. l. v. c. vi.; Henri van Heers, *Observationes Medicæ oppido raræ*, Obs. 8; Boerhaave, *de Morb. Nerv.* p. 462.

**IDIOPATHIC AZOOSPERMIA.**—There are cases in which, independent entirely of structural or other disease, there is an unaccountable absence of spermatozoa in the ejaculated fluid. In the work of Hirtz of Strasburg, published in 1861, entitled “*De la Sterilitie chez l’homme*,” there are narrated the cases of two robust men, several years married, childless, and presenting no abnormality of the genital organs. Coition was in these cases performed not only normally, but with unusual vigour; yet, in both cases there was a complete absence of spermatozoa. Hirtz observes, “A remarkable thing, and upon which both have insisted, is, that the ejaculations *are never followed by the sense of fatigue so generally experienced in the physiological state.*”

Notwithstanding the most nourishing dietary, and the administration of the oil of phosphor, neither one nor other had children. M. Mantegazza, professor of General Pathology in Pavia, referring to the absence of spermatozoa in the uriniferous tubes inspected after death, states, that in 100 subjects of different ages, he finds spermatozoa absent in nine times in one testicle, and twenty times in both. The absence is, in some of his cases, explained by material lesions, such as tubercles of the epididymis and testes, and fatty and fibrous inflammation of the epithelium of the seminal ducts, and these cases, of course, cannot be regarded as cases of idiopathic azoospermia; but in certain cases Mantegazza was unable to discover any physical alteration, and he arrives at the conclusion, that in “certain obscure cases of sterility during marriage, the fault may be in the man, even though the development of his genital organs should cause us to look to his wife for the cause of infecundity.”

*Relative Sterility.*—Cases are by no means unfrequent in which nothing abnormal can be discovered in either the male or female, where coitus is normally performed, and notwithstanding which sterility exists. It is difficult to offer a rational explanation of this state. Theoretically it has been assumed from the highest antiquity that in order to impregnation a sexual harmony must exist. On this belief is based the doctrine of epigenesis, regarding which Lucretius expresses himself in the following manner:— \*

“ Et commiscendo, cum semen forte virile  
Fœmina commulsit subita vi corripuitque.

Semper enim partus duplices de semine constat,  
Atque utrique simile est magis id quodcumque creatur.”

In the sterile cases under consideration there is, therefore, inferred to exist, a sexual incongruity. Aristotle has accordingly observed, “ Evenit sane, multis et mulieribus et viris, ut qui conjuncti inter se nequeant procreare, ubi dissociati se junxere cum aliis, queant.” †

Boerhaave records a case in point in the following terms:—“ In Gallia illustris casus contigit: princeps (S. G., nobilis) erat qui diù cum optima uxore in sterili conjugis vixerat. Ultimo ex judicio supremæ curiæ conjugium solutum est. Eodem concilio capto, maritus in viduum thorum aliam uxorem ducit, et vidua nupsit alteri; et ille filios, hæc prolem pariter ex secundo conjugio tulit. Apparet fecunditatem etiam a mutuâ quâdam ratione pendere posse, absque ullo absoluto vitio aut viri aut feminæ.” ‡

Cases of this description might be multiplied to an

\* De Re Natura, i. 4.

† Historia Animalium, ed. 1579, p. 139.

‡ De Prælect, Acad. t. iv. 2nd part, p. 256.

indefinite extent. Various theories have been advanced to account for their intimate nature, psychological and physical. It does not appear that this form of sterility is due either to temperament or constitution; and the theory of epigenesis is far from being proved. The preponderance of evidence tends in favour of the view, which regards them as due to what may not inaptly be termed a relative dislocation of the parts in the respective individuals. For example, uterine deviations in the female, and relative abnormalities in the male sexual organs.

## CHAPTER V.

## MALE IMPOTENCY.

SYNONYMS.—'Αναφροδισια (Gr.); Anaphrodisia (Lat.); Impuissance, (Fr.); Ohnmacht (Ger.); Impotenza (Ital.).

CONTENTS:—Physiology of Erection—Psychical Causes of Impotency—Objective Causes of Impotency—Subjective Causes of Impotency—Treatment—Physical Causes of Impotency—Bifurcation of the Penis—Vicious Directions of the Penis—Malformations of the Prepuce—Malformations of the Bladder—Idiopathic Impotency from Defect of Energy—Satyriasis—Priapism—Symptomatic Impotency, (A) from Physiological Conditions; (B) from Pathological States; Perverted Nutrition; Marasmus, Phthisis Pulmonalis; Obstinate Spermatic Discharges; Chlorosis—Impotency from Diabetes—Impotency from Affections of the Prostate, Neck of the Bladder, and Vasa Deferentia—Anticipating Misemission—Impotency from Affections of the Nervous System—Impotency from Toxæmia—Epitome of the Treatment of Impotency.

The subject of consideration in the foregoing chapter, sterility, was examined conformably to our definition of *procreative*, in contradistinction to *sexual* incapacity. In pursuance of our plan, the latter now presents for examination and discussion. It were an affectation unworthy of cultivators of medical science to ignore the comparative frequency of this troublesome affection, entailing as it does on the patient so much mental suffering, and so calculated to compromise domestic and social relationships. In the dominion of the organic functions, sexual capacity, as we have seen in the foregoing, is prompted by a stimulus apart from the will, and to the extent that it is so, so is it apt to be per-

verted by mental impressions, the temporary influences of which may be mistaken for cases of genuine impotency. Of this, however, more in the sequel.

In order to conceive the bearings of pathological conditions on this function, and to establish the treatment on a rational basis conformably thereto, it were desirable to glance at the physiological processes involved in the normal performance of the sexual act.

*Physiology of Erection.*—Erection has for its point of departure either a spontaneous incitation, instinctive or voluntary, originating in that portion of the brain in connection with the nerves of organic life, and the organs of generation, or a direct excitation of the generative organs, the glans penis, or the clitoris, and thus transmitted by the nerves of sensation to the brain, which influence in turn reacts on the erectile tissue through the organic muscular fibres so abundant in all erectile tissue. Under this influence the veins at the root of the penis contract, and the arterial blood accumulates in the cavernous body, the bulb and the glans, occasioning the phenomena of erection. The impediment to the return of the venous blood is materially aided by the action of the ischio-cavernous, and bulbo-cavernous muscles, which are so situated as, under genital excitement, to compress the penis at the root. When the penis is erect and introduced into the vagina of the female, friction of the glans causes an excitation of the sensory nerves, which is transmitted to the cerebellum. Reflex action is thus called into action, the semen flows into the urethra, the perineal muscles, and Wilson's muscle in particular, spasmodically contract. The semen in the urethra being imprisoned behind by the *verumontanum*, Wilson's,

and the other perineal muscles relax through exhaustion, being composed of striated muscular fibre, and, consentaneous with each relaxation, the semen escapes from the urethra *per saltum*. Such being briefly the mechanism of erection and emission, it will be obvious that the causes of impotency will vary according as particular portions of the sexual system may be individually influenced. These influences may be conveniently examined in their *psychical and physical relations*.

**PSYCHICAL CAUSES OF IMPOTENCY.**—Idiopathic impotency, which is more closely allied to the psychical than to any other variety of impotency, and comes properly under it, is a condition of extreme rarity. Planque quotes a case of this nature from the German.\* “One would not have succeeded so well,” he remarks, “with that impotent person of whom Hartmann speaks. He was strong and robust. Had large testicles, a short and flabby penis, he *never* had the power of erection nor secreted semen, and had never experienced the sentiment of love.”

The various emotional causes of temporary impotency (those of permanent impotency may be said to be exclusively physical) may be classified as excess of desire, an extreme respect for the object thereof, antipathy, timidity, dread, or shame.† Hence Zacchias

\* Eph. Ger. dec. 3, an 4, obs. 85, p. 184.

† It is maintained by some writers, that in order to prolific marriages a psychical correspondence must exist between the male and female. M. Virey accordingly remarks, “There should be a certain harmony between the sexes, both moral and psychical; and this is manifested in the sympathies of instinct which, independently of beauty, makes us prefer one person to another. The sexes secretly wish their union by a natural impulse which cannot be explained, and which in a mixed society renders us more attentive to one person than all the rest; and nature inspires us better in this respect than reason.”

remarks, "*Pudor quoque ejus rei causa esse potest, nam si vir erubescat coram spousa, numquam cum ea coibit.*" A further subdivision of these influences may be made into such as are *objective*, and such as are *subjective*, and in this light a brief epitome of them will be passed in review.

*Objective Causes of Impotency.*—By these influences are understood influences originating in a condition apart from the individual; by the *subjective*, influences originating in, and felt by the individual himself. Thus, a man at the moment of attempting coitus finds himself suddenly incapacitated; the one under the belief that he is under the influence of witchcraft, the other finding that the female is at the menstrual period, and the disgust thus occasioned gives rise to his temporary incapacity. In the former the impotency arises from a delusion, in the latter it is based on reality; in the one, the imagination is imposed upon by a myth; in the other, reason has succumbed to the weight of truth.


Of these, the first, are incontestably the most frequent causes of impotency, embracing as they do such a wide range, and are more frequently met with among individuals of culture and intelligence. Montaigne, of whom it may well be said, *Tetegit nihil quod non ornavit*, relates an example in point.\* A friend of his, on being married, conceived the idea that he was under the influence of sorcery, and thus impotent. He relates

This harmony consists less in similitude of temperament, age, &c., than in diversity; for if we remark, we observe a violent bilious man prefer a mild and modest companion, while a passionate impetuous woman finds most charms in a moderate, tranquil man; so that one may be tempered by the other, whether they be too cold or too hot." Cases of relative sterility may receive some elucidation in this manner.

\*Essais, l. I. ch. xx. ed.; de 1743 t. i. p. 105 et 106.



the manner of cure as follows:—"I had luckily in my possession a piece of gold plate on which were engraven some celestial figures against sun-stroke, and to remove headache, being placed over the upper and front portion of the head, and to hold it in this position it had attached to it a ribbon to be tied under the chin. I advised the Count to put this in use, that he would have the same success as others, but that he ought boldly to go to sleep. I would make him a friendly turn, and spare no effort to work the miracle which was in my power; while, upon his honour, he promised me to hold the matter absolutely secret. But when they brought him his midnight draught, if he had not accomplished sexual intercourse, he would indicate the same to me by a sign. He had had his mind and ears so disturbed, that his imagination was troubled, and he made me the sign at the appointed hour. I whispered to him that he should get up under the pretext of sending us away, and he should remove my night dress and put it upon himself, as soon as he had done my bidding, that it would be necessary, when we were away, that he should micturate, and at the same time repeat certain words and make certain movements. That at each of these three times, that he would encircle himself in a ribbon which I put in his hands, and put carefully down the medalion which was attached to it—the face in a certain posture. That being done, having at the last time tightened the ribbon, in order that it would not untie, nor move from its place, and that in all assurance he might return to his marital duties, not forgetting to throw my robe upon his bed, in such a manner as to cover both. These devices were the principal means of cure, our thoughts not being able to free



themselves, this jugglery gave them weight and confidence in the means employed." In short they were attended with the desired effect.

One influence is thus to be counterbalanced by another of a more agreeable nature, and by imparting, with assurance, the certainty of success, to the patient.

**SUBJECTIVE CAUSES OF IMPOTENCY.**—These causes may be based on a purely imaginary belief, or upon an erroneous conclusion based upon the existence of a real fact, referring either to a remote date, or existing simultaneously with the functional aberration.

Under the first category come most frequently affections of the genito-urinary organs, a dread of spermatorrhoea, varicocele, diseases of the prostate, &c. Masturbation and excessive venereal indulgences frequently inspire the belief. Roubaud mentions that he had treated a case in which the alleged causes of impotency existed hereditarily in three generations. His patient affirmed that at the age of thirty, during three generations, his family were affected with an unfortunate affection of the genitals; nothing in the external conditions of the organs indicated that condition, and it was requisite to pay close attention to appreciate a few painful symptoms. The principal sign, and that which manifested itself first, was a gradual enfeeblement of virility; my grandfather, continued the patient, experienced the same some months before his thirtieth year; my father some months after the same age, and I fifteen days before my thirtieth birthday. Notwithstanding, as with his grandfather, and father, the patient had not lost his venereal desires, nor the power of erection; but the

erections and ejaculation occurred only in solitude either under the form of pollutions, or brought about by masturbation. The recollection of this supposed hereditary malady inspired in the patient such a feeling of shame, that the terror replaced the natural desire, and abolished his generative energy. As may be readily conceived, the range of the imagination is sufficiently extensive, and groundless dreads are conjured up according to the temperament of the individual. In the other variety of cases, sexual incapacity is referred to conditions actually existing at the time, or sensations thus experienced. Among the former may be noted actual cases of varicocele, and in the same category neuralgia of the testicles, vesiculæ, and prostate.

The *treatment* of these cases is not without considerable difficulty. If there be a condition apart from the sexual organs, to which the impotency is ascribed, then by directing treatment ostensibly towards it, the confidence of the patient may be secured, and improvement thus accomplished. The cases in which real or imaginary conditions of the sexual organs are alone believed to be at fault, present greater difficulties. If the condition be purely imaginary, it is useless, according to the opinions of the most experienced, to insist at the outset upon pressing this assurance on the patient; it is better by kindness and tact to obtain his confidence, and secure his cure through the instrumentality of treatment, even if it be subordinate to the psychical operations involved. Of course, actual disease, and the neuralgic affections to which reference has just been made, must be treated on general principles.

**PHYSICAL CAUSES OF IMPOTENCY.**—In the first rank among the physical causes of impotency, is to be noted *entire absence of the penis*. This abnormality is very rare, but some such cases are related by medical jurists and others. Thus, Foedéré\* relates the case of a young soldier, in whom a fleshy excrescence existed in place of a penis, and in which the ureters terminated. The testicles were healthy. The excrescence enlarged under erotic excitement; and a white fluid escaped from it on its being subjected to friction. Schenck† and Cattier‡ have recorded similar cases. Belloc relates a singular case in which the ureters terminated at the bottom of the frænum. The subject of this malformation was *not* impotent; and strange to say, he had four children resembling him, *two of whom had the same malformation*. Zacchias, and Francis of New York, have related similar cases, in which the individuals had offspring.

The following singular case came under the observation of Nelaton.§ A midwife presented herself before Nelaton, desiring his opinion as to the sex of a child, which she carried, as she felt embarrassed as to the declaration of sex to the authorities.

The child, born ten days previously, was perfectly well formed in body, and sucked well. A scrotum existed in the usual situation, but there was a *complete absence* of penis; its place being occupied simply by a cicatrix. There was difficulty in determining at first whether the scrotum contained the bladder, or testicles. After an exhaustive examination, Nelaton found that the scrotum contained testicles, and that on the left

\* Médecine légale t. i. p. 364.

† Observ. Med. i. iv. c. ix.

‡ Isaaci Cattieri obs. Med. Borello Communicat. obs. xix.

§ Gazette des Hopitaux, 1854.

side there existed a hydrocele. The infant did not appear to suffer in any way, and the question presented itself, as to the manner in which micturition was affected.

Examination of the umbilicus revealed nothing abnormal; and the only passage remaining for the urine was the rectum. The midwife in being questioned regarding the dejecta, affirmed that they were always fluid, and seemed to contain urine. There was thus a species of cloaca where the urine and fæces combined prior to excretion.

*Extreme size, and imperfect development* of the penis have been described by writers as occasional causes of impotency. Incapacity for sexual intercourse from the former condition rarely happens; and then the impotency must rather be regarded as relative than absolute; and from the latter condition equally rare. Roubaud relates the case of a patient in whom the penis was almost imperceptible (*la grosseur d'un piquant ordinaire de poc-epic*), but which, by means of a mechanical contrivance, and the normal exercise of the organ, had acquired moderate dimensions.

M. Siredy saw at *The Charité*, in 1868, an individual suffering from Addison's disease so-called, and presenting a remarkable arrested development of the genital organs. At the age of twenty-eight, the penis was not larger than that of an infant of four years old. It measured, comprising an hypertrophied prepuce, but five centimetres in length. The scrotum was very small and empty. A few silken hairs covered the pubis. Venereal desires existed; the penis was capable of erection. Formerly, the patient had been addicted to masturbation; he never attempted sexual intercourse, and he never ejaculated.

**BIFURCATION OF THE PENIS.**—This abnormality is regarded by writers as causing sometimes impotency, and at other times sterility. It is frequently complicated with other bias of conformation. In an uncomplicated example of this condition which I saw in the Anatomical Museum of Parma, the bifurcation was confined to the root of the penis, and no physical impediments to the performance of the sexual act appeared to exist.

**VICIOUS DIRECTIONS OF THE PENIS.**—Abnormal directions of the penis, congenital, or the result of accident, may sometimes abrogate sexual capacity. The penis may be curved upwards, downwards, or laterally. As the result of accident the injury is usually confined to the cavernous body or urethra. By Petit these affections are considered as usually beyond the resources of medical or surgical art, and he gives the following explanation of the morbid condition. The cellules of the concave surface of the penis are smaller than those of the convex; the former, bound down by a fibrous band, cannot assume dimensions equal to those on the opposite side at the moment of the afflux of blood; besides, the cavernous body of the concave side is always shorter than that of the opposite side. Whence it results, that operation cannot in any case give to the cavernous body an equal length; there is always then a deviation of the organ during erection.

Petit\* gives the following *post mortem* examination in support of his opinion. "I have had occasion to convince myself of the reality of this fact, by the

\* Œuvres complètes édit. 1837, p. 717-718.

examination of the body of an infant which I saw on the day of its birth, and on which I did not wish to operate. The infant was brought to me on many occasions during life, in the expectation that I might be able to devise some means to cure the hypospadias, and accompanying curvature. I always said to the parent that the deformity was irreparable. The child died of inflammation of the lungs at the age of from ten to twelve years. I desired to make an examination of the body. I discovered at the outset one of the cavernous bodies; I opened it, introduced into it a tube by which I inflated it; the penis enlarged and curved itself downwards; in order to maintain that conformation, I applied a ligature to retain the air, dissected the penis, and found the urethra very short; it was ligamentous, incapable thus of extension, containing as it did no cellular tissue. I then carefully separated the two cavernous bodies; notwithstanding this separation, the cavernous body enlarged very little; the penis remained curved, and I judged, consequently, that the condition of the urethra alone was not the sole cause of the malformation, but that the cavernous body participated in its production. Having entirely separated the cavernous body, I found, on drawing each extremity, that I was unable to elongate the body; and inflating it anew by the first aperture that I had made, it assumed, as before, the curved form, what I had before attributed to a ligamentous band, which existed at the situation in which I had separated the urethra. I separated this band to the extent that I was able, without opening the cavernous body; and even cut transversely the fibres which I had been able to raise; in spite of all that, and not-

withstanding that I forcibly inflated the cavernous body, it retained its curved form. Having finally inflated it, I retained the air by means of a ligature, and allowed the specimen to dry. Some time afterwards, I cut the cavernous bodies, the one longitudinally, the other transversely. I found that the curved figure of the cavernous body was due to the fact that its cellules were almost blocked up in the concave surface, and that gradually they enlarged on to the convex part, where they were larger, or that the cellules had been originally of this form, but that the one portion of them being bound down by the urethra and ligamentous band, they were thus prevented distending as the others."

Congenital curvatures of the penis, to such an extent as to prevent sexual intercourse, are incurable, and the impotency thus occasioned absolute.

**MALFORMATIONS OF THE PREPUCE.**—It is not usual that malformations of the prepuce exist to such an extent as to cause impotency. Congenital imperforation of the prepuce is occasionally met with, and will require at once surgical interference. Pathological conditions may occasion temporary impotency, such as syphilitic condylomata, œdema, erysipelas, &c.

Phimosis, and its complication, adherence of the prepuce to the glans, may sometimes, in like manner, occasion temporary impotency, as likewise, fungous enlargement of the cavernous body, scirrhus of the prostate, enlargement of the *verumontanum*, and diseases, or congenital defects of the frænum. All these conditions must be treated on general principles conformably with the indications presented.



**MALFORMATIONS OF THE BLADDER.**—As a rule, cases of ectroversion of the bladder are attended with complete impotency, and not unfrequently with some variety of epi- or hypospadias. An exception to this rule came under the notice of M. Huguier at *la Charité*.\* “That organ (the penis) has the appearance of a long tubercle of about an inch in length; it is furnished with an imperforate glans, and the urethra is wanting entirely. The bulk of the penis is formed by cavernous bodies rudimentarily developed. The patient asserts that his sexual capacity is perfect, and that the venereal orgasm is followed by seminal ejaculation.”

A somewhat similar case came under my notice lately, for the second time, having seen the patient first while studying at the University of Glasgow. A. M'D., æt. 32, has complete ectroversion of the bladder. The bladder, occupying the pubic region, presents the appearance of a red tumour, on both sides of which the ureter opens, and urine escapes *in jets*, at short intervals; more urine escapes on the right side. On the under surface of the bladder a rudimentary penis exists; there is no urethra. The glans resembles somewhat a chestnut, is flattened, and larger transversely than longitudinally. There is a perfectly formed testicle in each side of the scrotum, and patient has sexual desires. Involuntary seminal emissions take place, in the waking and sleeping state, two or three times weekly, the fluid coming from the junction of the base of the penis and protruded bladder, and are attended with sexual orgasm. Under sexual excitement the penis elongates and becomes erect, to the extent of an inch and a-half. The testicles, patient

\* Gazette des Hôpitaux, 1840, No. 117, p. 467.

alleges, swell under excitement, and the semen is quite normal. In fifty-five seconds ingredients taken into the mouth appear in the urine.

Sometimes the penis presents on its superior surface simply the lower portion of the urethra, bridged over by a narrow band, as in a typical case of this variety which I have seen at *The Musée Dupuytren*, Paris.\* A somewhat similar case to this one is reported by Chopart.† “A man about thirty years of age died at the *Charité*, of malignant fever. His generative organs presented the following peculiarities:—From the symphysis of the pubis the length of the penis was but one inch, and from the root of the scrotum two inches. The penis was flat on its superior aspect, and convex on the under. The superior surface presented an elongated gutter, extending from the point of the glans to a red body situated between the pubic bones, whence the urine from the posterior wall of the bladder. The gutter was larger at its origin; and in the middle portion of it was seen the *verumontanum*, and the orifices of the ejaculatory canals and prostatic ducts. The glans penis was divided in two parts. Each cavernous body, instead of being incorporated together, was simply applied the one to the other, and they were not united save at their anterior extremity at the base of the glans. So incomplete was the union that air

\*The description appended to this case is as follows:—“Homme de vingt-six ans. La verge qui est assez bien développée, quant au volume présente, a sa partie supérieure une gouttière comme creusée entre les deux corps caverneux; l'extrémité postérieure s'engage au-dessous de arcade du pubis, pour gagner la vessie; à 2 centimètres de l'extrémité antérieure se trouve une bride de 2 millimètres de large, qui relie en ce point les deux côtes de la gouttière. (M. Blandin, 1848.)

† *Traité des Maladies des Voies Urinaires*, Paris. 1830.

forced into the cavernous body did not pass into the other."

An example even more remarkable than the foregoing is reported by Devilleneuve.\* In this case, in addition to the malformations, there was a perfect absence of venereal desires. Following the description of the ectroversion, the subjoined account occurs:—"Immediately under the tumour was an unformed penis, short, and slit on its upper surface for its entire length. The glans was easily recognised. Its colour and its spongy substance were natural; it contained some small sebaceous lacunæ; the penis seemed as if inversed, for on its superior surface the traces of an open urethra existed. Some observers alleged to have seen at the commissure of the penis and of the tumour, a superior portion of the urethra which was not cleft as the other portion of the urinary canal. It was not easy to verify this allegation, on account of the obscurity and of the pain which the examination caused to the patient. The remaining portion of the urethra was never explored; only the small portion of the anterior part of the cavernous body was visible, the rest being hidden in the hypogastrium. There was a complete absence of carnal desires."

Such infirmities, it need hardly be remarked, must be deemed incurable.

*Idiopathic Impotency in consequence of Defect of Energy*, has been separately described by Roubaud. There does not seem any reason for this differentiation, as the condition in question is either due to some of the psychical causes already referred to, or to some of the physical ones above discarded upon, or to be referred

\* Journal de Médecine, t. xxvii. p. 26.

to in the sequel. On the other hand, *excess of energy* may lead to, if not be the direct occasion of impotency; and this brings us to examine cursorily these psychico-physical sexual aberrations denominated *satyriasis*, *erotomania*, and *priapism*.

*Satyriasis*.—(Effrænis, impudensque veneris cupiditas libidinosa penis tentigine.—*Sauvages*). (Desiderium Veneris enorme.—*Linnæus*). (Est morbus proprius viris, cujus præcipuum symptoma est effrænis impudensque Veneris cupiditas, cum libidinosa penis tentigine; priapismus caret cupiditate libidinosa.—*Sugari*). *Satyriasis*, it will at once occur, cannot strictly be regarded as an immediate, but rather a determining cause of impotency, even as sexual excesses act similarly. It is an exceedingly rare affection in cold and temperate climates, and is as frequently a cause of death itself as of impotency. This state must not be confounded with *erotomania*, which is purely a psychological aberration characterised by morbid sexual desires, but *unattended with erection*. It is common to both sexes. Most frequently the genital syncope, as it may be termed, exists only in the presence of the object of desire. *Erotomania* is consequently one of the forms of relative impotency. In the female, the malady is usually determined by local conditions, such as plethora of the ovaries, and associated organs, from ungratified instinct or disease. It was regarded by the Greeks as a punishment on females who neglected the rites due to Venus.\*

*Priapism* is a long-sustained and painful erection of the penis, and without venereal desires. From the existing pain, and the attendant sequences, it may

\* *Vide* Esquirol des Maladies Mentales, 1838; Tardieu, *Etude Médico-légale*, 1868; Marc, *De la folie*, 1840.

properly enough be regarded as an occasional cause of impotency. Reference has already been made (pp. 81, 82, 112, &c.) to the etiological considerations relating to this state. The causes of priapism are numerous; accidents to the spinal cord and brain, the employment of genito-urinary excitants, gonorrhœa, vesical calculi, herpetic eruptions of the penis, &c., and its treatment will correspondingly vary. Should the inflammatory symptoms be of an aggravated character, gangrene ought to be guarded against by local blood-letting, and the application of evaporating lotions. In some cases not only is seminal emission not possible, but there is likewise retention of urine.

SYMPTOMATIC IMPOTENCY may be conveniently examined, 1st, in its relation to certain physiological conditions; and 2d, relatively to certain pathological states.

Foremost under the first category comes the question of age. This has been sufficiently discussed in Chap. III. (page 65, *et passim*), so far as the latter period of life is concerned, and for other relative information, the reader is referred to the section treating of MALE PRECOCITY. For the relations of constitution and temperament to the subject at issue reference is also made to Chap. III.

From *Pathological States*, the first variety of impotency claiming attention is that due to *perverted nutrition*; and of this nature the first species to which reference must be made is OBESITY. This condition operates in relation to the subject under consideration in a twofold manner. There can be no doubt that an abnormal accumulation of fat is due to perverted tissue change, and that this condition in turn, or operating in conjunction with its immediate cause, reacts prejudicially on the nervous system, and as experience

amply demonstrates, on the intellectual faculties and the organic functions. From this cause alone, impotency is a common expression of the dyscrasia in question. On the other hand, it may oppose a physical obstacle to the performance of the sexual act.

Of the *treatment* of this variety of impotency little need be said. It will be the treatment of the constitutional, rather than the local derangement which will claim consideration.

*Marasmus*, in contradistinction to the foregoing condition, has been described by authors as a cause of impotency; but marasmus being itself a symptom, it is more scientific to regard its causes in the light mentioned. It should be premised, however, that all conditions which induce marasmus do not in like degree impair procreative capacity, for notably in cases of *phthisis pulmonalis* the contrary obtains.

In *tabes dorsalis* there is usually a complete sexual debility. The penis is flaccid, the testicles atrophied, and neither psychical nor physical stimulants move the genital sense.

*Obstinate Spermatic Discharges*, it need hardly be necessary to remark, are a frequent and distressing cause of impotency.

*Chlorosis*.—In considering the treatment of *spermorrhagia* (Chap. III.) we endeavoured to indicate the *modus medendi* of iron preparations in that disease; and agreeably with the opinions therein expressed, we now find that chlorosis is to be regarded as one of the causes of impotency. That chlorosis is a disease peculiar to females is an opinion long grown obsolete.\*

\* Nouveaux éléments de pathologie, Paris, 1844; Répertoire général des Sciences Médicales, art. *Chlorosis*, Paris, 1844; Presse Médicale, No. 54, 1837; (Uzac), De la chlorose chez l'homme, Paris, 1853.

Of the successful employment of the tonic, and ferruginous treatment in this state, and attended with impotency, Roubaud relates the following case:—"A young man, twenty-five years of age, a native of Poland, lean, pale, and with impaired locomotive power, presented himself to me on account of impotency. He complained for some time prior of derangements of the digestive organs, of such an aggravated nature, that normal digestion had almost become impossible; constipation was constant, but there existed no pain in the region of the stomach or abdomen. The nervous functions were still more manifestly impaired; physical sensibility had become so exaggerated that the least change of temperature or the least movement affected him in a painful manner. The moral sensibility was no less affected, for the patient was unable to read, without weeping and being profoundly affected, not only a novel, but the ordinary newspapers; sleeplessness existed, and opium was impotent to remove it.

"In the midst of all these disorders, the intellectual faculties were affected, the patient being possessed of a profound hypochondriasis, incessantly impelling towards suicide. To these symptoms were added those peculiar to chlorosis, such as blanching of the skin, flaccidity of the muscles; and, with the sole exception of an absence of a carotid *bruit*, there existed all the symptoms characteristic of chlorosis.

"The genital organs presented externally nothing peculiar. The penis and testicles were of the natural size, and the skin of the scrotum contracted under the excitation of touch and cold. Venereal desires were absent, and sexual ideas inspired not quite disgust, but an indifference not far removed from actual repulsion.

There were no erections, under any form of excitation. At distant intervals, and under the influence of lascivious dreams or amorous imaginings, ejaculations took place, sometimes in the state of waking, and at other times during sleep, occasioning a certain orgasmic feeling, but leaving, in consequence, a general lassitude which lasted during several succeeding days. All the perversions of the genital apparatus came on simultaneously with those associated with the digestive derangements, and the constitutional enervation. Prior to the accession of the latter, coitus was accomplished, if not with energy, at least with regularity, and without any dread.

“In presence of all these circumstances,” says Roubaud, “I did not doubt that I had to do with a case of impotency from chlorosis, and the treatment was accordingly determined. Quinine was at first given, in order to give tone to the digestive functions, and following this medicine, ferruginous preparations were prescribed along with the general treatment appropriate to chlorosis, and a residence in the country. No special treatment was applied to the genital organs; under the influence of the general treatment of chlorosis, their energy was nevertheless restored, the venereal desires returned, and in proportion, the melancholy and the suicidal tendencies disappeared. Two years afterwards the cure was permanent, and the patient enjoyed in perfection all his functions.”

Ricord has described a syphilitic chlorosis. The bearings of such an affection on treatment will be sufficiently obvious.

*Impotency from Diabetes.*—Intimately associated with the other manifestations of general debility in



diabetes, sexual impotency frequently co-exists. It is not to the mere marasmus that this effect is to be ascribed, for we know that in cases of constitutional debility, sexual impotency is not necessarily an attendant phenomenon. In the instance under consideration, this symptom is obviously due to the derangement of the nervous system, of which the arrested combustion of sugar is the paramount pathological aberration. With the diminished combustion\* there is *in consequence* an arrested secretion by the most of the secretory organs; the former is made manifest in the diminished temperature of the diabetic, and the latter in the dryness of the skin, a notable diminution in the secretion of saliva and tears, constipation of the bowels; and Dupuytren and Thenard have noted that old uclers of the thighs cease to suppurate, and dry up. The diuresis is due to the presence in the blood, to an exaggerated extent, of an insufficiently oxidised product of eremacausis, and its stimulating effect in being so presented to the kidney. It is more than likely that the secretion of semen is diminished as the other secretions referred to, and that it is to this, and not directly to the bodily enfeeblement, that the impotency of the diabetic is to be ascribed. M. Valleiux,† accordingly remarks, under the article *Glycosuria*, "The generative functions are profoundly troubled. There are no erections; there is no venereal desire; sometimes even, according to some authors, the testicles become atrophied and the scrotum flabby."

That the impotency is direct, and not consecutive

\* *Vide* Author's "Observations on Therapeutics and Disease."

† *Guide du Médecin Praticien*, 2d ed. t. iii. p. 549.

upon the marasmus, has been shown, among other cases, by the one communicated by Mialhe, and Contour,\* to the Academy of Medicine. In their patient, the impotency had supervened antecedently to the general enfeeblement and marasums, and coincided with the diminution of the other secretions.

IMPOTENCY FROM AFFECTIONS OF THE PROSTATE, NECK OF THE BLADDER, AND VASA DEFERENTIA.—(*Anticipating Misemission.*)—In treating of spermorrhagia it was pointed out how frequently an inflammatory condition of the prostate and adjacent portions of the urethra were operative in maintaining preternatural seminal evacuation. In this place it remains simply to remark, that not only does this state give rise to spermorrhagia, but it may be the direct cause of a distressing form of impotency, to which the old writers applied the characteristic term *Anticipating Misemission*. That I may not expose myself to the charge of ignoring opinions contrary to any I have already adduced, or may yet advance in the sequel, and coming from any one whose opinions carry respect and consideration, it is but right, therefore, that I should assert that, in a vigorous literary onslaught against a Mr Dawson of London, Dr King Chambers contends that, “over-emission, when attempting connection, arises in sensitive persons from allowing the mind to dwell too much upon it.” I may here remark, that I yield to no one in my sympathy with the honourable motives by which Dr Chambers was so palpably and so justifiably actuated throughout this controversy; but one is apt, in the

\* Bulletin de l'Académie de Médecine, 1844.

impetuosity of a righteous crusade against any form of iniquity, to be too exclusive, or too dogmatic in his assertions; and while I believe with Dr Chambers, that in a considerable proportion of those cases the condition is temporary, and due to transient emotional causes, I am nevertheless persuaded that his assertion is too absolute, for in many cases the malady is of so persistent a nature as to indicate genital hyperæsthesia as its cause, and is alone curable by means so directed. Unfortunately, in all books\* in the English language on the subject of genital functional derangements, the most extravagant and unphilosophical prelections are indulged in, and thus containing much that is pernicious and overdrawn, they cannot fail to have a corresponding effect on all who come under the spell of their perusal.

In referring to this condition, Tissot remarks, "that symptom is very frequent among persons enfeebled (by sexual excesses), and it contributes to produce impotency; the least touch causing an erection, which is immediately afterwards followed by a seminal discharge."

Dr Tanner refers to the following case of *misemissio anticipans*. "A young man about twenty-five years of age, has never had sexual intercourse, but he confesses to having practised masturbation since he was thirteen or fourteen years of age. His penis is normal, both testicles are of a proper size, they feel healthy, and they are situated in the scrotum.

\* There is one honourable exception, which, in justice to the author, I am bound to mention. Making allowance for legitimate differences of opinion on minor points, the little book of Mr Courtenay on this subject is unobjectionable.

“He enters into a matrimonial engagement; but unfortunately a period of eighteen months or two years must elapse before he can fulfil his contract. During this interval he sees his future wife daily, and in spite of his resolve not to encourage any feeling of excitement, yet repeatedly he suffers from seminal emissions. At the time of marriage he is nervous, weak, and has fits of mental depression, while his wedding trip is rendered perfectly miserable on finding that immediately he attempts to have connection, an emission takes place, and the erection ceases. Night after night his efforts prove unavailing; until at the end of two or three weeks he becomes thoroughly ashamed of himself, afraid of his wife’s female relations, and terribly depressed.”

Is this the production of a luxuriant imagination? Where this accusation begins, in the case of an honourable man, argument ends. If this is a typical case, as I believe of many that have come under my own notice, and I am sure the experience of not a few will furnish similar cases, is it a normal? I trow not.

It is a condition which might justify divorce, and to remedy which, it is as much the province of the physician or surgeon as to extract a cataract or amputate a thigh.

The TREATMENT of this condition will be that of chronic prostatic hyperæsthesia as already referred to.

IMPOTENCY FROM AFFECTIONS OF THE NERVOUS SYSTEM.—In general terms all affections of the nervous system are divisible into two primary classes, viz., 1st, Such as are associated with a material lesion of a nerve or the nerve centres; and 2d, Such as are not

found co-existing with any apparent lesion. To the latter the term *neurosis* more especially applies; and it has been further subdivided according as the affection relates to the organic functions of the body, or those termed intellectual and more peculiarly central.

Relatively to sexual impotency, as already indicated, aberrations of the nervous system, may operate (A) *through affections of the nervous centres*, and (B) *through diseases of the nerves of communication between the nervous centres and the sexual system*.

The former category comprises almost all organic affections of the brain and spinal cord, such as chronic hydrocephalus; *remolissement*, cancer, tubercle, &c. How these states would thus operate by causing a paralysis of the sexual nerves, a consideration of the physiology of erection already referred to will make abundantly obvious. As Fodère\* remarks, "Local diseases of the vessels (of the penis), of the nerves, or of the muscles of the organ, affect sometimes the cellules of the cavernous bodies so that they do not fill sufficiently with blood to produce erection, and thus produce an atony approaching to paralysis. Chaptal and Gesner have cured cases of atony of the penis, of this nature, by repeated immersions in a decoction of mustard seeds. Weikard has had the same success with the internal administration of musk, in the case of an octogenarian. Other physicians have employed cold baths and iron, and have thus succeeded in subjects rendered impotent by excessive sexual indulgences or masturbation. Mahon has obtained cures by causing the parts to be bathed in a mixture of the mineral waters

\* *Traité de Médecine légale et d'hygiène publique*, t. i. p. 382.

of Hoffman with water, and finally enveloping them in cloths impregnated with the same mixture."

*Impotency from Diseased Conditions of the Nerves of Communication.*—These conditions comprise degeneration of the nerves, accidental, or pathological section, compression, and influences operating through reflex irritation from abnormal states of neighbouring organs.

*Impotency from Organic Neuroses* occurs rather as a symptom of certain conditions of mental alienation, and its etiological bearings are sufficiently explainable by the considerations advanced above, in treating of psychical impressions as causes of impotency.

**IMPOTENCY FROM TOXÆMIA.**—Certain substances introduced into the blood so change its constitution as to occasion impotency; and these may consist of either animal poisons, or products of the vegetable kingdom. To the former belongs the *syphilitic poison*. According to Ricord, as we have already seen, it may operate in this manner by determining in the first place, chlorosis. In other cases its action, in this wise, is not developed until it has invaded the entire system, and then by causing paralysis, due either to degeneration of the nerve centres or to exostosis, &c.

Sometimes in syphilitic cases the semen appears to lose its fecundating property, while the sexual functions retain their perfect energy.

*Lead Poisoning* is an occasional cause of impotency. According to Orfila, lead is not poisonous when in mass or in coarse powder; it is only when transformed into an oxide in the digestive canal that it so operates.

Its influence on the genital organs is characteristic. According to Tanquerel, it attacks the testicles, the penis, the spermatic cord, the uterus, the vagina, and the breasts; and gives rise to gnawing pains in these organs. Most frequently, this authority\* remarks, the two testicles are affected with pains at the same time; it is very rare that one alone is affected; but frequently one is more painful than the other. While the pain is most severe the organs retract towards the groin. If the left testicle is the seat of the greatest pain, it comes to occupy a position nearer the inguinal canal than that of the right, a condition the reverse of the normal. Compression frequently diminishes the pain; thus patients relieve themselves by compressing the testicles in their hands; suspension of the organs is attended with a mitigation of the pain. Tume-faction and redness of the painful organs is seldom witnessed.

In seven cases Tanquerel found the pain seated at the root of the penis; the entire portion of the organ was painful in twenty-four; in some cases there is retraction of the penis to such an extent that it is almost hidden in the skin of the scrotum, especially when the latter is not contracted. Venereal desires and seminal ejaculation were never observed in the cases which came under Tanquerel's observation.

Impotency and arthralgia have been known to supervene on the drinking of beer from leaden vessels. The treatment of impotency so caused will be obviously that of lead poisoning, viz., the administration of iodide of potassium, and the use of galvanism.

\* *Traité de Toxicologie*, 5e ed. t. i. p. 822.

IMPOTENCY FROM ANTIMONIAL AND ARSENICAL POISONING.—Workmen exposed to the inhalation of the fumes of antimony have been observed to become in this manner impotent. Orfila, in referring to this subject, quotes Lohmerer to the following effect.\* This authority, it is remarked, “has seen four individuals who were frequently exposed to the fumes of antimony in an establishment where tartrate of antimony was prepared on a large scale. The chemical form of the fumes thus inhaled was that of antimonious acid, and the chloride of antimony. Lohmerer observed the following symptoms:—Pains in the head, difficulty of respiration, pain in the back, mucous and sibilant rales in the chest, difficult expectoration of tenacious mucus, insomnia, abundant sweats, anorexia, diarrhoea, dysuria, with a discharge of irritating mucus from the bladder, *atrophy of the penis, disgust of sexual relations, and complete impotency*; pustules existed on different parts of the body, particularly on the thighs and scrotum; there was pain in the testicles, and atrophy of them corresponding with the condition of the penis.” It is not to be doubted, Orfila adds, that the prolonged inhalation of these vapours suffices to cause death; but he thinks that some of the effects thus occasioned are due to the inhalation of arsenical vapours as well, a metal in conjunction with which antimony so largely exists in the condition in which it is used in commerce. According to Lohmerer, antimonial poisoning, and consequently the impotency thus occasioned, ought to be treated on the antiphlogistic method, with milk, and finally by opium, tannin, and the internal administration of quinine.

\* *Traité de Toxicologie*, t. i. pp. 650 et 651.



**IMPOTENCY FROM THE TOXIC EFFECTS OF IODINE AND BROMINE.**—One of the most certain effects of the prolonged use of iodine, in large doses, is atrophy of the glandular system. Acting in this manner on the testicles the abuse of iodine may be a direct cause of impotency. Roubaud relates that he has seen it thus induced. The patients were phthisical, and the impotency ensued in the course of treatment by Chartroule's method, which consists in the inhalation of iodine vapour. In one of the cases venereal disease remained, but the penis was incapable of erection, notwithstanding that the testicles retained their normal development. In the remaining three there was atrophy of the testicles and sexual frigidity. Iodide of potassium, in large cases, exercises a similar influence. Bromide of potassium, I have known, in common with many others, to cause temporary impotency.

With respect to the *treatment* of these cases, when the testicles are not atrophied, the mere suspension of the influence of these agents is sufficient to cause recovery. Good diet, country air, and direct genito-urinary stimulants, are indicated in the more grave cases.

The influence of camphor on the genital system has been already referred to in the treatment of spermorrhagia. Its prolonged use may likewise occasion temporary impotency.

**EPITOME OF THE TREATMENT OF IMPOTENCY.**—The treatment of impotency must vary as its cause is presumed to be psychical or physical. If the former, attention must be judiciously directed rather to the mental aberration, than to the local incapacity, though

this may be accomplished by an ostensible treatment of the latter. Should symptoms of constitutional prostration predominate, then general stimulants and nervine tonics are indicated, such as strychnine, phosphorus, &c. Cantharides must be carefully if at all employed. Cold bathing and electricity (the constant current) are of undoubted efficacy in the treatment of impotency. In general terms, good feeding, fresh air, and moderation in all respects must be observed.

#### MALE PRECOCITY.

Even as history affords so many notable examples of mental precocity, so does medical literature furnish peculiar and unfortunate examples of genital precocity, and these may be referred to in this place, as well from their interest in a physiological point of view, as for the purpose of reprobating the public exhibition of such unfortunate children. The earliest notice of a case of this kind with which I am familiar, is that referred to by Pliny (Nat. Hist. lib. vii. c. 171). This was the case of a boy at Salamis, four feet in height, who had reached puberty when only three years old. Craterus, brother of Antigonus, both generals in the army of Alexander, and the former a man of considerable literary fame, mentions having seen a *man* who, in seven years was an infant, a father, and an old man, and a corpse.

Saint Jérôme relates that an infant of six years had sexual connection with a nurse with whom he slept, and impregnated her.\* Planque reports the history of two children who, at the age of four years, had their genital organs so largely developed as to be capable of

\* Bibliothèque choisie de Médecine, t. i. art. *Aggross.*

accomplishing sexual congress. Fagès de Cazelles\* states that, in the month of July 1753, there was born at Cahors an infant who at the age of four seemed at full puberty. The organs of generation had the volume and exact form which they present at the age of thirty; this boy manifested, at the same time, a decided *penchant* for the opposite sex. M. Ruellet had observed precocious puberty in a boy of three years and four months.

In 1748, Mr Dawkes, a surgeon of St Ives, near Huntingdon, published a small tract, entitled “*Prodigium Willinghamense; or, an Account of a Surprising Boy, who was buried at Willingham, near Cambridge,*” on whom he wrote the following epitaph:—“Stop, traveller, and wondering know, here buried lie the remains of Thomas, son of Thomas and Margaret Hall; who not one year old, had the signs of manhood; not three, was almost four feet high; endued with an uncommon strength, a just proportion of parts, and a stupendous voice; before six he died, as it were of an advanced age. He was born in this village, October 31st, 1741, and in the same departed this life, September 3rd, 1747.” Other cases of a similar nature may be found described in the “*Journal Des Savans* for 1688,” and the “*Philosophical Transactions* for 1745.”

**TREATMENT.**—The treatment of such unfortunate cases as the above will resolve itself into moral as well as medical. The public exhibition of such children cannot be too strongly reprehended, for, as Dr Good remarks, “The orgasm is fed by a repetition of examina-

\* *Journal de Médecine (Ancien)*.

† *Bulletin de l'Académie de Médecine*, 1843.

tions, and the polluting tide that exhausts and debases the body, is at length accompanied, even though it should not be so at first, with a polluting pleasure, that in a still greater degree exhausts and debases the mind." An occasional application of leeches to the affected part is recommended, cold bathing, aperients, and light and unirritating garments. It is alleged that, by these measures, a healthful repression is produced, and that the unhappy infant is thus enabled "to grow up with gradual vigour to the possession of a healthy manhood, instead of sinking, as has been sometimes the case, into a premature and rabid old age at the early period of puberty."

## CHAPTER VI.

## ANOMALOUS URETHRAL DISCHARGES.

CONTENTS:—Simple Urethritis (Phallorrhœa)—Prostatitis—Leucorrhœa; its Comparison with Gonorrhœa—Kuss's Differentiation of Specific and Non-Specific Vaginitis—Causes of Simple Urethritis: Masturbation, Inordinate Sexual Indulgence, Vaginal Discharges, &c.—Symptoms of Prostatitis—Acute Epididymitis as a Cause of Urethral Discharge—Constitutional Causes of Simple Urethritis: Teething, Worms, Skin Diseases, Long-continued Intellectual Application, Excessive Physical Exercise, Hæmorrhoids, &c.

That the urethra, like any other mucous surface of the body, is capable, in any portion thereof, to take on inflammatory action, attended with a purulent discharge not specific or venereal, is a conclusion which all must admit. It is one not only justifiable by the most ample experience and observation, but likewise to be proclaimed, equally in the interests of science, as in those of the closest social relationships. How frequently are urethral discharges of a non-specific nature observed in persons of unimpeachable chastity, and how fatal to peace of mind, and how unjust to many females, it would be to pronounce such discharges specific.

Under the term *Anomalous Urethral Discharges* we include all such discharges as are not venereal, and not seminal; consequently such as are caused by simple

urethritis (phallorrhœa); discharges due to prostatitis (prostatorrhœa); such as accompany orchitis, and such as are induced by certain constitutional diatheses.

From what has been advanced already (Chap. IV.) it will be manifest that it is impossible to pronounce whether the secretion of Cowper's glands can be discharged singly from the urethra, and that a præternatural discharge from the vesiculæ seminales, independent of the fecundating portion of their contents, is an absolute impossibility. It follows, accordingly, that the diseased condition termed vesicular gleet, has, properly speaking, no existence, save in luxuriant fancy.

As in the female, in the present state of our knowledge, it is next to impossible to distinguish between leucorrhœa and gonorrhœa, except by such surmises, confessedly inexact, as general considerations afford; so in the male, it may be equally impossible to discriminate between a case of simple urethritis and one of gonorrhœa with any degree of well-founded assurance. To such an extent, indeed, is this difficulty recognised, that it is contended by certain modern authorities, that gonorrhœa is capable of being communicated by females who are themselves perfectly free from the disease. This, if admitted, would practically amount to the conclusion that there is no such disease as specific gonorrhœa—an alternative to which we cannot assent, even admitting, as we do, the extreme difficulties of diagnosis. The relation of the two affections is not more remarkable than that which subsists between the suppuration of pyæmia and that of a healthy surface; yet no one will contend that there does not exist some specific distinction unrecognisable

by any chemical or microscopical test which we possess. Professor Kuss of Strasburg, in examining Lock cases, was in the habit of collecting the secretion of the vagina and cervix uteri on a glass rod, depositing it upon small pieces of glass, and examining it microscopically. If the liquid exhibited pus globules, the patient was detained for gonorrhœa; if simply vaginal cells, she was believed to be free from the specific disease (France Médicale, 1872). But this distinction is, we fear, too absolute. The *absence of pus cells* might be presumptive, of a non-gonorrhœal, but their *presence*, we submit, would not necessarily prove the existence of the specific disease.

The various causes of urethritis are to be regarded as causes of phallorrhœa. In the first category we find the various forms of irritation, comprising masturbation, inordinate sexual indulgence between perfectly healthy persons, as Hippocrates so long ago remarked, catheterism, irritating injections, all vaginal and uterine female discharges, and the sanious discharges accompanying malignant diseases of the uterus. With regard to the lochial discharge as a cause of phallorrhœa, Cullerier remarks, that it is not while the discharge is present, but two or three days before, or from twenty-four to forty-eight hours after its cessation, that it is more apt to act as an irritant, for during this time preceding, or subsequently, there is an acrimony of the vaginal mucus, which disappears coincidently with the menstrual flow. The pus of a chancre, in the same manner, may act only as an irritant, its effects being limited to a simple blenorhagia.

Diday\* alleges that in cases of simple urethritis such

\* Arch. Gen. de Med., October, 1861.

causes are characterised by their obstinate persistence under the usual treatment of gonorrhœa, and I am disposed to think, from such cases as have come under my own notice, that the statement is correct. The following case may be cited in illustration. J. R., a healthy young man, then residing in the country, consulted me on the 15th April 1871. On the 1st of January, he had indulged freely in intoxicating drink, and had connection with a female servant in the house in which he resided. On the previous Friday he had also connection. On Wednesday the 4th January, he complained of a burning heat in making water. For this symptom, no discharge having yet appeared, he consulted a druggist on the following day. Internal medicine alone had been prescribed. Patient believes the medicine to have been copaiba. No discharge taking place, the medicine was discontinued; but within a week from its discontinuance a copious purulent discharge from the urethra occurred. Patient, in consequence of the supervention of this new symptom; put himself again under the treatment of his former adviser. On this occasion the same internal medicine was given, in conjunction, however, with an injection, the latter of which patient believed to have been too strong, as it made him worse. *After contracting the affection* of the urethra, patient had frequent intercourse with his paramour. He accused her of labouring under venereal disease, which she stoutly denied. He is confident that she suffered from no discharge or disease either then or afterwards. The female was aware that he suffered from some disorder of the genitals, but the fact that *she enjoyed an immunity from the affection* confirmed her in the belief of his statement,



that what he suffered from was simply a "weakness of the glands." This discharge continued for about five months, despite the most painstaking treatment.

In the foregoing pages we have seen that the fluid which is sometimes discharged at stool, particularly when the bowels are costive, is usually the secretion of the prostate. When the prostate has been excited by excesses, this discharge becomes more abundant and more continuous, and constitutes prostatorrhœa. This secretion is distinguished from seminal fluid by the absence of spermatozoa, by its being thinner in consistence, more transparent, and more or less gummy or tenacious in quality. Evacuation takes place during the least erection or excitement, and more especially during defæcation, the bowels being costive. This discharge is not in itself very serious; but, thanks to Lallemand and his *confrères*, all urethral discharges are regarded with such dread, that the fear of spermatorrhœa, which may be thus induced, may amount to a positive disease. In the aggravated cases of prostatitis, the diagnosis is further aided by the sense of weight in the hypogastrium, pain in the perinæum, and difficulty of micturition, with more or less rectal tenesmus. The pain has less tendency to radiate towards the meatus urinarius than in cystitis, and it is besides pulsative. There is no vesical tenesmus.

On examination by the rectum a tumour is found occupying the pelvis to a greater or less extent; painful on pressure if in the inflammatory stage, and fluctuating if in the suppurative. On practising catheterism an obstacle is presented in the prostatic region; this is overcome by the slightest pressure, a circum-

stance which distinguishes prostatitis from stricture; and different from what obtains in cystitis, the bladder being entered, a great quantity of urine escapes therefrom.

The constitutional symptoms vary in like manner. In prostatitis they are more marked; the fever is high, there is heat of skin, insomnia, and general anxiety.

The following are typical cases of urethral discharge from prostatitis.

A. R. consulted me, December 12th, 1871. I had formerly successfully treated patient for spermorrhagia. A short time prior to this period he called on me with reference to a purulent discharge from the urethra, which, as he had married six months previously, and had led a life of perfect chastity, I had no difficulty in pronouncing to be non-specific urethritis. This affection yielded to ordinary means within a reasonable time; but while the purulent discharge had disappeared, a considerable quantity of slimy matter was voided immediately after micturition and at stool, and nocturnal emissions of semen were of frequent occurrence. Of late patient has had no sexual desires; he is troubled with restlessness, partly owing, no doubt, to mental causes; and he is obliged to rise frequently during the night to empty the bladder. Patient was put under the treatment already described. *December 12th.*—The nocturnal emissions and the slimy discharge have disappeared, but there is still pain when seminal emission takes place, along with deep-seated pain in the perinæum, more or less constant. A short time afterwards these symptoms entirely disappeared.\*

\* As we have already seen (*vide* page 181, *et passim*), it cannot be absolutely maintained that seminal fluid may not sometimes be discharged, in conjunc-

In the treatment of such cases as this I have seen much benefit from the internal administration of oil of eucalyptus globulus and an ethereal extract of tar. Mr Dun, chemist, Argyle Street, Glasgow, has put this combination for me in the convenient form of capsule. These I have used with advantage.

G. G., aged 29, married, has suffered for years, to use his own language, "from seminal weakness."

tion with the secretion of the prostate, in this manner. Hence Tissot remarks, "Un autre accident auquel cette quatrième cause (masturbation) rend les masturbateurs plus sujets, c'est une espèce de paralysie des organes de la génération, d'où naissent l'impuissance, par le défaut d'érection, et la gonorrhée simple, parce que les parties relâchées laissent échapper la véritable semence, à mesure qu'elle arrive, et suinter continuellement l'humeur que séparent les prostates; et qu'enfin toute la membrane intérieure de l'urètre acquiert une disposition catarrheuse, qui la dispose à fournir un écoulement de même nature que celle des pertes blanches des femmes; disposition, pour le dire en passant, moins rare qu'on ne pense," &c.

Boerhaave's opinion on this point is to the following effect:—"On lit, dans quelques livres de médecine, que la semence s'est quelquefois écoulée sans qu'on l'ait sentie. Mais cette maladie doit être très-rare; et je ne sache pas que la semence se soit écoulée sans quelque chatouillement, ou ce n'était pas de la vraie semence séparée dans les testicules, et accumulée dans les vésicules séminales, quoique j'aie vu la liqueur des prostrates s'écouler." Tissot holds a different opinion, and the one which, as we have already seen, the facts adduced lead us to support. He remarks, "Cette autorité est sans doute bien respectable, mais, outre que Boerhaave ne décide point positivement, il a contre lui tous les médecins; et, pour ne point sortir de son école, l'un de ses plus illustres disciples, Gaubius, admet l'évacuation de semence sans sensation. Mes propres observations ne me laissent pas douter de l'existence de l'une et de l'autre maladie. J'ai vu des hommes qui, après une gonorrhée virulente, après des excès vénériens ou des masturbations, avient un écoulement continu par le verge, mais qui ne les rendaient pas incapables d'érection et d'éjaculation; ils se plaignaient même qu'une seule éjaculation les affaiblissait plus qu'un écoulement de quelques semaines; preuve évidente que la liqueur de ces deux évacuations n'était pas la même. . . . J'en ai vu d'autres qui avaient, comme les premiers, un écoulement qui les affaiblissait beaucoup plus, qui les rendait incapables de tout prurit vénérien, de toute érection, et par là même de toute éjaculation, quoique les testicules ne parussent point hors d'état de faire leurs fonctions. Il me paraît démontré que, dans ces derniers, la vraie semence testiculaire s'écoulait sans sensation."

Patient is not incapacitated for sexual congress, but during the time there is a constant discharge from the urethra, followed afterwards by headache and general pains throughout the body. The act of copulation is of normal duration as a rule; when otherwise it is abnormally protracted, *and sometimes no discharge whatever ensues*. Patient is not troubled with nocturnal emissions. Before marriage genital excitement was accompanied, as it now is, with a copious secretion from the urethra, and pain "in the lower part of the stomach and testicles, which almost doubled me up." This state has lasted for eight years. Patient is at present under treatment.

ACUTE EPIDIDYMITIS is likewise occasionally attended with a sympathetic discharge from the urethra, resembling a case of genuine blenorrhagia. It is not a little remarkable, that in cases of acute gonorrhœa when orchitis supervenes, the discharge from the urethra is generally suspended, and that the converse should take place when orchitis is the primary affection, the discharge in the latter case abating as the inflammatory symptoms are moderated. I have more frequently seen this discharge in cases of orchitis occurring within a moderate time after the cure of gonorrhœa. It need hardly be remarked, that the appropriate treatment of this variety of urethral discharge is essentially that of orchitis itself.

Excessive seminal emission is a frequent complication of the urethral one thus arising. These take place most frequently during the night. The semen is usually normal, but sometimes it is tinged with blood, and its ejaculation is attended with much pain.

## CONSTITUTIONAL CAUSES OF SIMPLE URETHRITIS.—

All constitutional states which cause undue acidity of the urine may induce urethritis. Hence in a special manner the lithic acid diathesis so operates. On the 14th August 1874, my attention was directed to the fact that a patient under treatment in one of the wards of the Glasgow Royal Infirmary for obstinate articular rheumatism and granular conjunctivitis, had a purulent discharge from the urethra. Patient had been in the hospital for six weeks, and it is hardly necessary to say that neither during that time, nor within a considerable time after date of admission, had he been exposed to contagion.

Urethral discharges are occasionally seen in both sexes coincidently with teething. There exists at this period an excitation of all the mucous surfaces, that of the urethra being no exception. This fact has an important medico-legal bearing. Worms may sometimes in children be an indirect cause of urethral discharges, the irritation which they set up causing the patient to rub the genitals to such an extent that supuration may be induced.

*Skin Diseases* have been regarded from remote antiquity as causes of blenorrhagia. Hippocrates (*De Natura Muliebri*), regarded lepra and herpes in this light. The fact is notorious, that skin diseases are occasionally followed by urethral discharges, and acute eczema is often seen to take the place of a discharge of this nature.

The *carbuncular diathesis* has in like manner been regarded as a cause of blenorrhagia. Thus Cullerier remarks—"Two years ago I was consulted by a colleague for an eruption of five or six boils, which I

treated by bath and emollient applications. The boils disappeared gradually, and the patient believed himself cured, when he was seized with a blenorrhagia. (He had never had such a discharge formerly.) He came to me accusing his mistress, whom I carefully examined, and found the sexual organs in perfect health. The blenorrhagia observed the usual course, and was attended with acute pain. On the sixteenth day of its duration, a new carbuncle appeared, with a considerable fever, and the discharge, still considerable and acute, disappeared the following day. During the sixteen days that it persisted, I examined the female, on three occasions, and discovered no disease. The day after the disappearance of the discharge the patient had connection with his mistress, and no bad consequences resulted for either."

Civiale remarks that he has seen urethral discharges to supervene on long-continued intellectual application, and of excessive physical exercise in persons not so accustomed. Diseases of the rectum have a special proneness to occasion urethral discharges, more especially in aged persons. Hæmorrhoids are frequently noticed to act in this manner. As this happens in the male, so in the female are uterine diseases seen occasionally complicated with urethral discharges. It is towards the primary lesion that treatment must be directed.

The prolonged use of asparagus has been stated to cause blenorrhagia. The alleged influence seems limited to its aggravating cases of existing disease.

Alcoholic drinks, especially in persons of feeble constitution, are the occasional causes of blenorrhagia, and they always aggravate it when otherwise existing.

Beer, especially South German beer, has been regarded as a common cause of urethral discharges.

*Cantharides* taken internally, or absorbed from a blister, may so irritate the urinary canal as to cause superficial suppuration, and even gangrene. These consequences are frequently noticed in cases where cantharides is taken as an aphrodisiac. In contradistinction to what obtains in ordinary blenorrhagia, that arising from cantharides commences primarily in the deeper portions of the urinary canal.

## CHAPTER VII.

## IMPOTENCY AND STERILITY IN THE FEMALE.

CONTENTS:—Conditions Essential to Fecundation in the Female—Impotency or Inaptitude for Copulation—Congenital, Accidental, and Pathological Anomalies—Stricture of the Vagina—Congenital Atresia of the Vagina—Pathological States of the External Genitals—Infecundity or Inaptitude for Impregnation—Absence of the Uterus—Imperforation of the Cervical Canal—Abnormal States of the Uterine Neck and Os—Uterine Displacements Independent of Coitus—Exaggerated Elevation, Prolapsus, Versions, and Flexions—Uterine and Vaginal Discharges—Abnormalities of Ovulation—General Causes of Sterility—Bearings of Menstruation on Fecundation—Venereal Excesses as a Cause of Sterility—Frigidity—Artificial Impregnation.

Procreative capacity exists in the female from the age of puberty, commencing with the function of menstruation, and terminating at the ménopause, or “change of life.”

In order to fecundation the following conditions must exist; an ovum must be formed in the ovary, it must be transmitted to the uterus, and there must be no impediment to its coming there in contact with healthy male seminal fluid.

That the latter be capable of accomplishment, it is requisite on the part of the female that the external genitals be of normal conformation, permitting of natural sexual intercourse, and that there be no malformation of the vagina, or uterine cavity. Considerable confusion has existed in the designation of female



sexual aberrations. These conditions may be conveniently regarded from three positions—1st, impotency; 2d, infecundity; and 3d, sterility.

By the term *impotency* is to be understood, as in the male, an inaptitude for the performance of the sexual act; by *infecundity*, an inaptitude for impregnation; and by *sterility*, an inaptitude for germination, so to speak.

#### IMPOTENCY, OR INAPTITUDE FOR COPULATION.

The causes of female impotency resolve themselves into *congenital*, *accidental*, and *pathological* anomalies of the vulva and vagina.

The complete absence of the vulva, a condition, however, very rare, and when it does exist usually accompanied with serious malformations of the internal organs, would constitute a complete and incurable impotency.

Adhesions of the large and smaller labia sometimes exist to such a degree as either to offer an obstacle to copulation, or altogether prevent its accomplishment, to the extent that it partially or wholly occludes the vaginal orifice. This condition is usually remediable by gradual dilatation of the vagina, or forcible tearing, under chloroform, of the adventitious adhesions. Hypertrophy of the labia majora and minora, with preternatural elongation of the clitoris, while they do not usually offer a complete impediment to the performance of the sexual act, offer more or less of an impediment. The same observation applies to abscesses of the pudenda, cysts, and diverse tumours, hernial protrusions of the bladder into the vagina, and prolapsus of the uterus.

Should the development of the labia and clitoris be excessive, operation will not only be justifiable, but will be successful in removing the inconvenience thereby occasioned. The other conditions referred to will demand their own special and appropriate treatment.

Osseous tumours of the symphysis, particularly of a syphilitic nature, may be found to such an extent, and occupying a situation in which they may occasion an insurmountable obstacle to sexual congress. Operations may or may not be justifiable according to the indications presented. If the syphilitic cachexia be surmised, general and local antisiphilitic treatment will usually succeed in removing the diseased condition.

Complete absence of the vagina is a necessary cause of impotency, and is an incurable condition. Partial absence of the vagina is not necessarily a cause of impotency, as the impediment may be only relative, and capable of removal by surgical interference. It does not follow that even the absence of the vagina, in its inferior portion, necessarily presupposes absence of the uterus and the upper portion of the vagina, and abrogation of the ovarian and uterine functions.

M. Amussat, in 1835, saw a case in which there was absence of the vagina, but not only did a uterus exist, but menstrual fluid escaped therefrom. The patient was a German, fifteen and a half years of age. Her belly was enlarged by the accumulation of menstrual fluid in the uterine cavity. The tumour was hard, firm, and painful on pressure. The vulva was perfectly formed, but on separating the labia majora and minora, instead of a vagina continuous to the uterus, a *cul-de-sac* was found, in the centre of which the *meatus urinarius* existed. On introducing the finger into the

rectum the uterus was distinctly felt occupying the entire cavity of the pelvis. Amussat performed the following operation. The patient being prepared by a bath and a cataplasm to the vulva, the surgeon, with a large sound, pressed in the direction of the vagina, below the ureter, so as to cause a small hole. He repeated this act with the little finger, having, preliminary to this, introduced another finger into the rectum in order to serve as a guide; the pressure was painful, but already so far efficacious, that the impression of the little finger remained. With one finger in the rectum and the thumb in the vulva, he drew the perinæum backwards in order to afford him more room, and introduced a prepared sponge into the hole he had formed in the vagina. Three days afterwards he repeated the introduction and impulsion of the finger; then he introduced two fingers. After five other attempts of this nature, repeated at intervals of one or two days, he had formed an artificial passage of about six centimètres in length; then, at the base of that passage, he directed, upon an indicator or director, a trocar which he plunged into the tumour. Then replacing the trocar by a bistoury, covered with lint to about a sixth of its extent, there being yet twelve to fifteen millimètres to traverse, vent was given to 350 to 380 grammes of black clotted blood. By introducing a fine cannula into the vagina, a cure was completed, lasting many years. Malgaigne\* in referring to this case remarks, "I have had myself to perform a similar operation on a female who had her vagina obliterated in consequence of child-bearing. I commenced by dividing the cicatrix which had come almost to the level of the vulva; then

\* Manuel de Médecine Opératoire, 6th ed. pp. 702, 703, Paris, 1854.

after the first bleeding, I tore the parts with a director pushed forwards, and enlarged the cavity from right to left until I had attained so far as the uterine neck. It was necessary to have maintained dilatation of the vagina during many years, with a gentian tent; but ultimately success was so far obtained that sexual congress became practicable, though up to the present the patient has not become *enceinte*."

STRICTURE OF THE VAGINA.—An altered condition of the vaginal capacity according to its extent may offer a complete or a relative obstacle to the sexual act. This narrowness is sometimes limited to one point, but more frequently it extends to the entire length of the vagina. In the slighter cases it gives way to the repeated performance of coitus. In the more obstinate cases, gradual dilatation by means of laminaria digitata and sponge tents should be practised. Certain precautions should be adopted in the employment of these measures, which may be summarised as follows:—1st, The tent employed should be well prepared; 2d, Before its introduction it should be ascertained that there is neither any inflammatory condition of the uterus nor of its annexed organs; 3d, The operation should not be performed at a period too near that of menstruation; 4th, To enjoin the use of cleansing injections during the retention of the tent, such as a weak injection of permanganate of potash; 5th, Not to leave the tent in the vagina for too long a period, and to remove it promptly if it occasion much pain; 6th, To withdraw it very gently; 7th, To arrest hæmorrhage with a suitable styptic, such as perchloride of iron solution, alum, &c.; and 8th—A precaution,

on which Marion Sims insists—the patient should observe the recumbent position during the whole time that the sponge tent remains in the vagina.

*Congenital atresia* of the vagina, while it may render coitus impossible, does not necessarily prevent fecundation. A case of this description is related in the *Mémoires de L'Académie des Sciences de Paris*. The patient was a young person whose vagina hardly admitted a quill point. At each menstrual period, she experienced in her uterus intense pain, and the menstrual fluid was discharged with much difficulty. She was married at the age of sixteen to a vigorous young man, whose embraces she was unable to receive. Visited and examined by physicians, she was declared by them incapacitated for copulation. However, after eleven years of impotency and sterility she became pregnant, notwithstanding that the vagina had not acquired greater dimensions; but towards the fifth month of pregnancy the vagina commenced to dilate, and at the end of the period of gestation it had acquired such dimensions as to permit the exit of a child. This case is the most unique on record.

Tardieu relates a somewhat similar case in his *Etude Medico-legale sur les attentats aux mœurs*. It referred to a young woman who became pregnant, though M. Legrand found the usual signs of virginity at the moment of accouchement.

In such cases as these the seminal fluid has been deposited at the entrance to the vagina, and has been impelled towards the uterus by ciliary motion.

Longitudinal membranous partitions sometimes exist in the vagina. They do not usually cause absolute impotency, but they are a source of pain to both

parties, so that in the absence of a double uterus, and when the division occupies but a portion of the vagina, the membrane should be removed. When the bifidity is complete it should not be interfered with, in case of uterine complications, and when the probability exists that the course of normal labour would effectually remove the obstacle.

When abnormal communications exist between the vagina, the bladder, and the rectum, either in consequence of congenital defects, or as the result of accident, coitus is still *possible*; but impotency may arise from feelings of disgust, as already referred to in a foregoing chapter.

A case is, however, related by Louis\* of a young woman in whom no signs of external genital organs were manifest. She menstruated, however, by the anus, became *enceinte*, and an infant was born through this communication with the uterus!

Bloody tumours, abscesses, cysts, and vaginal polypi render coitus sometimes difficult and painful.

Hernial tumours, cystocele, and rectocele, when they have acquired large dimensions, may occasion impotency.

Rupture of the perinæum may cause relaxation of the vagina to such a degree that the seminal fluid will not be retained in it. Cases of sterility from this cause are of occasional occurrence.

Acute vaginitis is sometimes attended with an amount of inflammatory hyperæsthesia which renders coitus impossible.

Spasm of the vagina (*vaginismus*) is a frequent cause of impotency and infecundity, especially in nervous and

\* Dictionnaire de Médecine pratique, t. iv. pp. 16, 26, ii. ed.

excitable females during early life. In its contracted condition the vagina may be thus diminished to such an extent as hardly to admit a quill. The immediate obstacle to coitus seems referable to two conditions—the extreme hyperæsthesia of the vagina and vulva, and the spasmodic contraction of the sphincter which is induced by the pain. The pain is not infrequently of such severity as to cause syncope, and sexual congress comes thus to be regarded with dread and loathing. Different from the hyperæsthesia which accompanies inflammatory conditions, that of vaginismus is intermittent, and usually immediately associated with physical or mental sexual excitation. In the treatment of this condition narcotics will be found of the greatest service. Belladonna, valerianate of zinc, arsenic, and other medicines of this class, should be given internally. Should symptoms of anæmia exist, the internal administration of bromide of iron is specially indicated. The local treatment will resolve itself into the gradual dilatation of the vagina by mechanical means. Should this fail, the patient should be anæsthetised, and forcible dilatation practised. In cases of this nature the sphincter has been incised by Huguier, Dupuytren, and Michon, and more recently by Marion Sims. This operation, however, should only be regarded in the light of a *dernier ressort*. The local application, in the form of pessaries, of belladonna, opium, camphor, veratria, &c., should be enjoined. Sympathetic irritation from the lower bowel should be guarded against by the regulated administration of gentle aperients.

Independently of the foregoing condition there sometimes exists a genuine *neuralgia* of the vagina, which

may operate in a similar manner relatively to sexual congress. This affection is at times idiopathic, at other times sympathetic of some uterine affection; and Lisfranc\* alleges that it is hereditary in certain cases. According to Tanchout it recurs at the menstrual period, and as a sympathetic nervosis of the menstrual state.

When due to uterine states, ulceration of the neck of the uterus is the most frequent cause; next in point of relative causation come simple inflammatory conditions of the uterine neck, and uterine deviations.

Roubaud has insisted at considerable length on *frigidity*, or the absence of sexual desires, as a cause of impotency. It cannot with strict propriety be so regarded.

#### INFECUNDITY OR INAPTITUDE FOR IMPREGNATION.—

While the vulva and vagina may be perfectly normal, it is further requisite, in order to impregnation, that both the seminal fluid deposited in the vagina during sexual congress, and the ovum have free communication with the uterine cavity. Obstructions of the nature here indicated will, it is obvious, refer to the Fallopian tube and the uterus itself, and more especially to the neck of that organ.

Congenital absence of the uterus is a circumstance occasionally noticed, and must be regarded as most obviously an incurable cause of infecundity. These cases are confessedly of rare occurrence. An example presented at the Hôtel-Dieu, under the care of M. Rostau.† The female was a prostitute. The external organs of generation were of normal configuration, and

\* Clinique Chirurgicale de l'hôpital de la Pitié, t. ii. p. 163, et Gazette des hôpitaux, 1842.

† Gazette des hôpitaux, 1842.

‡ France Médicale et Pharmaceutique, t. ii. p. 149, 1855.



covered with hair in the usual manner; the labia minora and majora had a normal development, and the clitoris exhibited no malformation; the breasts were of natural size and appearance. The voice was feminine, and no indications existed which pointed to the internal abnormality. In introducing the finger into the vagina a resistance is offered by a narrow part of the vagina, which is, however, overcome by slight pressure, the finger entering the *cul-de-sac* proper of the vagina. Examination in every direction does not reveal the existence of a uterus, even of a rudimentary nature. Ovaries, however, seemed to exist in the pelvic cavity. Boudelocque\* reports a similar case, in which complete absence of the uterus existed, yet were the external genitals quite normal. Heyfeldert† (of Erlangen) records a remarkable case in which this malformation existed in the most complete manner, with the singular fact that coitus was perfectly performed, *and at each menstrual period a flow of blood took place from the urethra*. Numerous other cases of a similar nature are recorded in books special to gynæcology.

Imperforation of the uterus, adherence of its walls, and bifidity of the organ, are regarded as being similarly opposed to fecundation.

Under the same category is to be ranked extirpation of the uterus by surgical operation, and obliteration of its cavity in consequence of inflammation or gangrene. An exaggerated post-parturient retrograde uterine evolution may induce complete atrophy, or atrophy limited only to the neck. While the atrophy is limited to the neck of the uterus, fecundation is not

\* Art des Accouchements, t. i. p. 183.

† Deutsche Klinik, 1851, No. 54.

impossible, though it is thus rendered improbable or difficult. When it is general it may constitute only a temporary obstacle to fecundation, as it may be remedied by judicious constitutional treatment. When of long duration it must be regarded as an incurable cause of sterility.

Lisfranc long ago pointed out that conicity of the uterine neck was to be regarded as an obstacle to infecundation, and that this occurred in the proportion of nineteen cases of this nature in twenty. The view has been controverted by Roubaud, but has been more recently confirmed by Marion Sims, who found that a conical state of the uterine neck, either congenital or acquired, was the cause of infecundation in eighty-five in a hundred cases. In these cases the neck is small and projecting, and its canal is proportionally narrowed.

Lisfranc first, and Marion Sims and others since, have advised and practised amputation of the projection thus formed. This procedure should only be adopted after failure by the more simple and less dangerous treatment by gradual dilatation.

Hypertrophy of the neck of the uterus not unfrequently operates in a similar manner. Incision of the part thus affected is counselled. The internal administration of iodide of potassium and ferruginous preparations should be enjoined.

Warty excrescences of the neck and *os uteri* sometimes prevent the entrance of the seminal fluid into the uterine cavity. These growths should be removed by excision, and their subsequent appearance prevented by application of some caustic, perchloride of iron, or a strong solution of chloride of zinc answers well for this purpose.

Congenital closure of the neck of the uterus is a rare affection. It may be limited to the utero-vaginal aperture or extend throughout the cervical canal. It may constitute a cause of sterility, according to its seat and the extent to which it offers an obstacle to the evolution of the normal function of the organ.

The canal is sometimes obstructed by the formation of false membranes resulting from endometritis. This membrane sometimes takes the form of a diaphragm in the canal. To remedy this condition the membrane should be perforated—an operation which ought to be performed at the intermenstrual period—and dilatation of the os effected by sponge or laminaria digitata tents. If necessary scarifications of the os may be beneficially resorted to.

When the obliteration extends to the uterine cavity absolute sterility ensues, and the condition is irremediable by either medical or surgical treatment.

Impermeability of the os may further be occasioned by the application of caustics, such as caustic potash, acid nitrate of mercury, nitrate of silver, &c. The occlusion in this instance is immediately due to the formation of a dense cicatrix, which, according as it may be complete or incomplete, may be regarded as a cause of sterility. The treatment will consist in division with the bistoury, uterine catheterism, and gradual dilatation.

*Stricture* of the cervical canal does not necessarily prevent the passage of seminal fluid to the uterus; it simply renders its penetration therein more difficult, and the chances of impregnation thus correspondingly less. It is usually occasioned by, and consequent upon uterine inflammation, either general or limited to the cervix. Fecundation has taken place in such cases,

even when the cervical canal was so narrow as not to admit an ordinary probe.

Fibrous strictures, and these associated with sub-acute inflammation of the uterine mucous and sub-mucous tissues, are frequently of such a nature as to prevent fecundation. This is evidently due to the fact that the uterine tissue is so matted with coagulable lymph (new formation of tissue), that it does not expand coincidently with the development of the contained ovum.

If the inflammation is confined to the surface of the mucous membrane, the obstacle thus occasioned is but temporary, subsiding under judicious treatment.

Fecundation is often prevented by spasmodic contraction of the uterus—a circumstance which largely accounts for the sterility of prostitutes, and of highly nervous females, otherwise constitutionally and locally healthy.

The *os uteri* is sometimes the seat of calculous impaction, which may prevent fecundation. This is diagnosed by the sound, even as in the bladder. The removal of such concretions is not usually a matter of difficulty. Should difficulty, however, be experienced, the mass may be forced into the uterus, and lithotripsy employed, as in the case of vesical calculi. The *debris* should then be removed by the employment of tepid injections.

When the diminished calibre of the canal is due to simple inflammation, mechanical interference as by sounds, dilatation, &c., is to be deprecated. The treatment should here consist of emollient applications, leeches if necessary, and the internal administration of small doses of calomel and opium. When spasmodic

contraction is diagnosed, the internal administration of bromide of potassium, bromide of camphor, belladonna, and valerianate of zinc is specially indicated. Local treatment by sedatives is likewise to be enjoined.

The position of the uterus in the pelvic cavity—one of the most prolific sources, by the way, of professional charlatanism, and of groundless feminine solicitude—has unquestionably an intimate bearing on the facility or the reverse of impregnation, though I very much doubt if many of the constitutional symptoms ascribed thereto have any relation therewith save in the perverted brain of the too fussy gynæcologist. The normal position of the uterus is in the axis of the vagina; to the extent that it deviates from this position so are the chances of impregnation diminished, and *vice versa*. *Uterine displacements*, in the first place, may be distinguished into such as are *temporary* and such as are *permanent*. In the former there exists a preternatural mobility of the organ, and its condition may be varied by means of the finger laterally, posteriorly, anteriorly, upwards and downwards, and this may likewise take place during coitus. The latter circumstance is capable of explaining in an especial manner cases of relative sterility.

Uterine mobility is frequently attended with more or less deviation of the organ from its normal position, and seems to be due to a relaxed condition of its ligamentous structures.

In the treatment of cases of this description general and local tonics are to be employed. The internal administration of strychnine, iron, and ergot of rye should be counselled. Galvanism should be employed; and vaginal douches, shower baths, and open air bathing resorted to.

In addition to this form of uterine deviation, Roubaud describes what he terms *vital* displacements due to a hyper-excitability of the nervous system. The existence of this questionable variety of uterine displacements is supported by Mercurialis, on the basis of a statement by Lucretius. "*Est et aliud quod peto,*" says he, "*audiat sine risu, scilicet forma et ratio concubitus; quia si mulieres in concubitu retractent clunes et frequenter agitent, non concipiunt. Rationem adfert Lucretius philosophus (iv. De Natura) his duobus versibus.*

*Eicit enim sulci recta regione viaque  
Vomerem, atque locis avertit seminis ictum.*

*"Hac ratione, dicebat Lucretius, doctas meretrices frequenter clunes agitare, non ut delectentur, sed ut non fiant gravidae."*

UTERINE DISPLACEMENTS INDEPENDENT OF COITUS.—Uterine displacements admit of division either as they affect the entire portion of the organ or simply its more movable portion, the body alone; the former are designated versions, and the latter flexions; and they comprise respectively abnormal elevation, preternatural depression, ante-version, retro-version, and latero-version; ante-flexion, retro-flexion, and latero-flexion.

*Exaggerated Elevation as a cause of Sterility.*—This condition, though described by writers as an occasional cause of sterility, is rarely, however, of such a nature as to prevent fecundation. It has been noticed, notwithstanding,\* as a sequence of metro-peritonitis, which by the formation of adventitious adhesions to the sur-

\* M. Boivin—Recherches sur les causes les plus frequentes de l'avortement, 1828.

face of the uterus, had fixed the organ in an abnormal position. It will be obvious that tumours in the pelvis might act upon the uterus in a similar manner. If idiopathic displacement of this nature is surmised to exist, safe means might be adopted with a view to its abasement, such as hot baths, abdominal bandaging, and exercise. Beyond these measures, surgical or medical treatment of any description is to be deprecated.

*Prolapsus of the Uterus*, according to its degree, may certainly operate as a cause of female sterility. In its first degree it may be regarded as being rather favourable to fecundation; when more considerable, the uterus may so fill the vagina that coitus is rendered difficult; and in the third degree it may be absolutely impossible. The immediate cause of this condition seems to be a relaxed state of the uterine ligaments, and it is more frequent in women who have borne large families. Cases, however, occur, in which prolapsus of the uterus exists even in virgins and in women who have never borne children. Munro records a case of uterine prolapsus in an infant of three years of age.

While coitus is impossible in such conditions, it is not absolutely impossible for impregnation to take place. In these cases attempts should be made to replace the uterus in the pelvis, and retain it in its normal position with a sponge or annular pessary.

*Versions of the Uterus*, in either of the directions above indicated, occasion infecundity only when they exist in an exaggerated degree. This they may cause both by the abnormal situation of the os, and by presenting, often by the apposition of the walls of the cervical canal, a direct obstacle to the passage

of the seminal fluid. The normal condition of the uterus corresponds to the axis of the pelvis, and the degree of uterine version is estimated by the sine of angle formed with this axis. According to Marion Sims, if the uterus be retroverted to an extent of from  $25^{\circ}$  to  $30^{\circ}$ , it is not inapt for fecundation; but if it reaches an extent of  $40^{\circ}$ , fecundation is difficult, while from  $60^{\circ}$  to  $90^{\circ}$  it is absolutely impossible. In retroversion the uterine neck is found behind the arch of the pubis. In this case the seminal fluid is deposited in the posterior *cul-de-sac* of the vagina. In latero-versions the uterine orifice approximates the ramus of the pubis on the side corresponding to the displacement, and the seminal fluid, in like manner, becomes lodged in the lateral *cul-de-sac*. In cases of anteversion, the *cervix uteri* has its axis directed towards the concavity of the sacrum, a position diametrically opposed to that in which the seminal fluid is projected, and hence fecundation is less likely to take place in this variety of uterine deviation than in any of the others.

It is interesting to examine in what proportion the several uterine displacements act as causes of sterility. Marion Sims has arrived at the following conclusions, on this point, after the examination of 505 cases of sterility. He divides these cases into two classes—1st, Those who had never borne children; and 2d, such as became sterile after one or more pregnancies. To the first category belong 250 cases, in 171 of which number uterine displacements existed, 103 being ante-versions and 68 retro-versions. The second class comprises consequently 255 cases, with 172 displacements, 61 being ante-versions, and 111 retro-versions. It is thus appar-



ent that uterine versions exercise an influence almost parallel in each class; that two-thirds of sterile females are affected with uterine displacements, so far as these statistics show, without reference to the cause by which they have been produced; and that the ante-versions and retro-versions are in an inverse proportion in each class, ante-versions predominating in the former, retro-versions in the latter, and almost in equal proportion.

When uterine deviations attain an exaggerated degree, the primary indication of treatment is to replace the organ in its normal position, and retain it there by mechanical means in expectation of the establishment of the normal tone of its appendages. The methods of treatment will vary according as the cause may be simple, idiopathic, or complicated with organic disease of the uterus itself or its associated organs. If the displacements be symptomatic, *i.e.*, complicated with adjacent pathological states, mechanical interference is, in the first place, to be reprobated, as it is both ineffectual and dangerous under such circumstances.

The morbid states under consideration may consist of utero-peritoneal adhesions, retraction, and relaxation of the uterine ligaments, congestions, or tumours either in the uterus itself, or in adjacent portions of the pelvic cavity, and frequently by peri-uterine phlegmasiæ. These conditions will primarily demand the treatment specially appropriate to themselves.

If, on the other hand, vaginal examination reveal neither evident disease, pain on pressure, nor pathological conditions of neighbouring organs, and if the uterus is freely movable in the pelvis, and easily reduced, then mechanical appliances ought to be employed.

Uterine pessaries are of diverse forms and composition. Having regard to the fact that pregnancy itself occasionally cures the mal-position of the organ, it will follow that such mechanical devices as retain the uterus in its proper position, and do not interfere with the performance of the sexual act, are to be preferred to such as do not fulfil these indications. Accordingly such pessaries as the saddle-pessary of Hodge, or the ring-pessary of Meigs, answer best. It is requisite that the pessary be suitable to the particular case; thus it must retain the uterus in its normal position, and must neither exercise an undue pressure on it, nor on the walls of the vagina. This is not always determined on the first trial of the instruments, but only after several tentative experiments.

Marion Sims relates two cases of sterility cured by a pessary of cotton saturated in glycerine being placed in the posterior *cul-de-sac* of the vagina. In similar cases—cases of retroversion—a cylindrical piece of sponge may be placed in the same position. The diameter of the sponge ought to be about half that of the vagina, and of a sufficient length to support at least the half of the uterine neck. The vaginal mucus causes swelling of the sponge, and the organ is thus elevated above the surface of the vagina, on which it formerly reposed.

Such means as these will be obviously ineffectual in remedying displacements due to adhesions or contraction, &c., of the uterine ligaments. In these cases gentle attempts at reduction should be made by means of the uterine sound. The sound should be used as a lever, and a to-and-fro movement exercised in the direction opposite to that of the displacement. The

sound should be introduced but to a moderate degree into the uterine cavity. These manipulations should be of short duration, and repeated once or twice weekly. Force should always be avoided, and such interference should never be practised in the presence of uterine hyperæsthesia or inflammation.

*Uterine flexions*, in common with the foregoing, act as frequent causes of female sterility. In this class of cases, the canal is in a more especial manner obstructed by the acute reflexion or angle which the body of the organ forms with the neck. Such flexions may exist in either of the directions in which uterine versions are found. In the less marked cases sterility is not necessarily caused, and the graver conditions are assuredly more rare than is maintained both within and without the profession. In certain cases, however, independently of direct examination, such conditions are revealed by sympathetic affections of the rectum and bladder, pains in the region of the kidneys and thighs, which affections usually arrest the primary attention of both patient and attendant. The mechanical treatment will consist in careful uterine catheterism, and convenient supports placed in the *cul-de-sac* of the vagina, in a position relatively appropriate to the direction of the flexion. Uterine pessaries are not unattended with danger. Medical treatment, if adhesions be suspected, should be enjoined, as likewise cold bathing and moderate exercise in the open air.

*Inversion of the uterus*, is a condition of occasional occurrence, and may take place to such an extent as to constitute a veritable hernia of the organ, as Dugès and Madame Boivin observe.\* This condition may be

\* *Traité pratique des maladies de l'utérus*, t. I. p. 224.

acute or chronic. In the former it is usually caused by mal-praxis during parturition, or by abnormal shortening of the umbilical cord. In other cases it exists at a period remote from that of parturition, and seems to have no obvious connection therewith. It obviously enough must occasion sterility.

Recent inversion may endanger the life of the patient by copious hæmorrhage, the intensity of the pain, or the supervention of convulsions. These complications are to be guarded against by the timeous use of the taxis.

When the inversion is recent and incomplete it is more easily reduced, and thus such accidents as gangrene are less liable to happen. Inversion of long standing is frequently irreducible. It constitutes an obstacle to sexual congress and to impregnation; it is not unfrequently attended with copious hæmorrhages which weaken the patient, and may lay the foundation of a general marasmus. Atrophy of the organ sometimes takes place under these circumstances, and this must be regarded as a favourable termination

*The treatment* of uterine inversion resolves itself into (a) means of reduction, (b) surgical appliances, and (c) palliative measures.

The first, reduction of the organ, is generally accomplished without difficulty, if the displacement has been but of recent date. The index finger should be introduced into the vagina, and gentle pressure exerted on the protruding mass in the axis of the vagina and uterus; the body of the uterus will be passed successively through the utero-vaginal, by that of the neck and the cervico-uterine orifice. If the first attempt prove ineffectual, the taxis should be repeated. Each trial should not extend beyond twenty to thirty

minutes. The prone position is favourable to reduction, the patient being placed on her knees. Pressure over the hypogastrium has been counselled in order to fix the neck. The operation will be facilitated by emollient applications or pomades, and the inhalation of chloroform.

Even after a considerable interval the taxis alone will suffice to reduce the organ. M. Barrier has reduced an inverted uterus after five months, M. Courty after six months, and Marion Sims after an interval of nine and twelve months. It will be obvious that the extent of displacement bears an intimate relation to the facility with which reduction is accomplished.

Surgical interference will be required in the chronic and irreducible cases. The most simple operation consists in making a few longitudinal incisions, in order to divide the circular fibres. Should this not succeed amputation of the organ may be considered requisite. This, however, it must be admitted, is an operation of great gravity, either owing directly to the large and uncontrollable hæmorrhage which often ensues, or to secondary inflammation and its consequences. Removal by the ecraseur is less dangerous than excision by the knife, though the latter was successfully practised by Velpeau. Ligature of the organ may accomplish the same object, and with diminished risk, if care be taken not to excite peritoneal inflammation. After the operation the patient should be confined to bed until the wound has completely healed. The healing process may be accelerated by weak injections of chloride of zinc with borax, permanganate, and potassium chlorate, &c. When the inversion is irreducible, and the radical cure may be contraindicated, all that can be done is

to treat complications, and make the state of the patient as tolerable as possible. Hæmorrhage is to be guarded against, and checked by topical astringents, of which perchloride of iron, tannin, infusion of oak-bark and logwood, answer well. Pain is to be allayed by emollient applications containing belladonna and other sedatives. Strong caustics may be judiciously employed with a view to determining atrophy of the organ. Much exercise should be avoided, and the horizontal position should as much as possible be observed.

*Uterine polypi*, if large, may occasion sterility; when small, they do not necessarily so operate, but even then they may be the immediate cause of uterine hæmorrhages which prevent the growth of the foetus, and determine its expulsion. When large they cause sterility, by so obstructing the passages that the seminal fluid is prevented access to the ovum. The extraction of the polypus is the only means to remedy this form of sterility.

*Fibrous tumours* are sometimes found embedded in the walls of the uterus; when small, they do not prevent fecundation, and women go through the full term of gestation under these conditions. On the other hand, when large, they may determine such hæmorrhages, or so occupy the uterine cavity, that the foetus is prematurely expelled. This cause of sterility must be deemed incurable.

*Congestion of the uterus*, when it is intense or habitual, is a condition unfavourable to impregnation. It is a frequent cause of abortion. This condition ought to be treated by dry cupping, the application of leeches to the os uteri, and counter-irritation over the hypogastrium.

*Metritis*\* seems to operate as a cause of sterility in a twofold manner, viz., either by the congestion of the endo-uterine mucous membrane, or by the inflammatory turgescence obstructing the canal of the Fallopian tubes. When the submucous tissue of the uterine neck is affected, an impediment will, in like manner, be offered to the passage of seminal fluid.

*False membranes* may form on the internal surface of the uterus, and thus block up the uterine canal, and that of the Fallopian tubes similarly.

*Morbid secretions* from the uterine surface seem to prevent fecundation in a twofold manner, either by their quantity or quality. If the secretion be abundant it may so occupy the canal that the passage of seminal fluid will be prevented, or this may be occasioned still further by the opposition presented by a copious flow of the morbid secretion; or it may so dilute the seminal fluid that it is rendered incapable of impregnating the ovum.

Mucous secretions may be sometimes of such a consistency as to form a solid or semi-solid plug in the cervical canal. If the uterine secretions be too acid, the chemical action on the spermatozoa which thus ensues is such that their death is caused. According to M. Donné, pus and muco-pus has no toxic influence on the spermatozoa.

What applies to uterine leucorrhœa applies in like manner to that which proceeds from the vagina. Every thing depends on the amount of acidity. Marion Sims has noticed a case in which the vaginal secretion was so acid that death of the spermatozoa resulted in five or

\* Uterine Diphtheria has been described by M. Benavente (el sigolo medico), *France Médicale*, t. II. 1855, p. 23.

six minutes after coitus. He likewise remarks, that with test paper he has been able to predict that the secretions were of such a nature as probably to kill the spermatozoa, and thus cause sterility.

Should these discharges be associated with indications of inflammatory action the preliminary treatment will be regulated accordingly. Having subdued the congestion and the tenderness, intro-uterine injections should be resorted to; and these may consist of solutions of nitrate of silver, chlorate of potash, chromic acid, tincture of iodine, &c., or soluble bougies, or uterine pessaries impregnated with tannin, or other astringent according to the indications of the case, may be inserted into the uterus, and allowed to remain during night, and thus melt within it.

When an acid reaction of the utero-vaginal secretions is very marked, weak alkaline lotions should be injected into the vagina. I have seen great benefit accrue in such cases from the use of a solution of borax, with glycerine and infusion of oak-bark. During my connection with the Glasgow Royal Infirmary this was esteemed a favourite lotion, and much benefit from its use resulted.

Cotton plugs, saturated with a convenient astringent and detergent lotion, may be inserted into the vagina with the prospect of amelioration.

*Idiopathic uterine hæmorrhages* are a frequent cause of sterility. The uterine plethora is to be guarded against by revulsive bleedings, as by leeches, about the trunk and upper extremities. Dry cupping, sinapisms, and cold baths may be used with a like object in view, and appropriate to the circumstance. Preparations of opium and antispasmodics are useful when this con-



dition is attended with an erethism of the nervous system, and pains in the lumbar and uterine region.

My friend Professor Béhier has reported two examples of copious menorrhagia treated by large doses of opium, although there was an absence of pain.

M. Costaz, with a view to its acting as a sedative to the circulation, has employed the hot bath during from half an hour to an hour. He relates success. This remedy seems more specially applicable to sthenic menorrhagias, and those of nervous and highly excitable individuals.

Local applications of cold water or ice over the hypogastrium, or introduced into the vagina, have frequently a marked influence in checking the hæmorrhage. The whole body may be immersed in cold water with a like result. Astringents and styptics must be employed with caution in these cases; they sometimes cause secondary congestion and augmented hæmorrhage. Absolute repose and the dorsal decubitus should be strictly observed during treatment.

*Passive hæmorrhage* is of a different nature, and requires relatively different treatment. This is more frequently observed in chlorotic females, in individuals who have been debilitated by depressing social or hygienic influences, or chronic organic diseases. In these cases the uterus participates in the general enfeeblement. Its walls have less tone, its blood-vessels are relaxed, hence result stases and exudations of blood, leading to menorrhagia. Two indications of treatment are here obviously enough presented, viz., to invigorate the general system; and secondarily, to act directly on the uterine circulation. To fulfil the first indication, nourishing food should be taken; malt liquor, if not

specially contraindicated, will have a good effect. Open air exercise should be enjoined; and the preparations of iron, quinine, strychnia, ergot of rye, offer a class of medicaments for beneficial selection. The mineral acids, with bitter infusions, may be more suitable for certain cases. Local and general bathing is an admirable and effectual adjuvant to the general treatment.

The use of certain mineral waters has been counselled in such cases, viz., the ferruginous waters of Spa, of Forges, of Passy, &c.

To meet the second indication, to give tone to the uterine fibres, the application of cold water over the hypogastrium or into the vagina, perichloride of iron injection, and of other astringent agents, should be resorted to.

Ergot of rye—the watery extract being an excellent preparation—may be given internally, or ergotine be used in the form of subcutaneous injection. Extract of nux-vomica may likewise be administered, and galvanism be used beneficially. Obstruction, or stricture of the Fallopian tubes, is an occasional cause of sterility. To act in this manner, however, the affection must be double, *i.e.*, it must coexist simultaneously on each side.

The development of the tubes may be arrested, and this takes place consentaneously with a like affection of the ovaries. This is a perfectly irremediable condition.

Of all the morbid conditions of these tubes, their obstruction and obliteration are the most frequently disclosed on *post-mortem* examination.

Much obscurity surrounds the diagnosis of affections of the Fallopian tubes, and medical or surgical interference is correspondingly impotent for benefit. In

the presence of inflammatory symptoms, antiphlogistics are indicated. Catheterism of the Fallopian tubes, though attempted, is not a justifiable operation.

ABNORMALITIES OF OVULATION (*Sterility in the more strict sense of the term*).—The ovaries are the analogues of the testes in the male. As in the latter, healthy testes are essential for the formation of prolific seminal fluid, so in the former diseased or congenital abnormalities of the ovaries may be the occasion of absolute sterility; but again, as in the male, this association is not necessary, unless both ovaries be so affected that healthy ovulation cannot take place. That conception has taken place where but one healthy ovary existed the observations of many observers incontestably show.\* Complete absence of the two ovaries has been many times observed, and invariably when it has been, congenital menstruation and fecundation never took place, and the other portion of the sexual system participated more or less in the arrested development. M. Chereau draws from an observation of such cases the following conclusions:—"The congenital absence of the ovaries is not necessarily accompanied by that of the uterus. However, the latter organ, not having been influenced by the general sympathy of the reproductive organs, does not acquire at puberty the development which, under ordinary circumstances, it would have taken. It is thus found, under such circumstances, small and atrophied. On the contrary, the congenital absence of the uterus is not necessarily attended by that of the ovaries. The complete absence

\* *Vide* Philosophical Transactions, 1848; Bulletin de la Faculté de Médecine de Paris, 1847; Traité des accouchements de Gardieu, t. I. p. 157, &c.

of the two ovaries has such an influence on the organism, that the female affected with this vice of conformation does not present the differential characteristics of her sex. The pelvis does not enlarge; the mammary glands are small; and there is an absence of menstruation. The external genital organs present corresponding deviations from the normal; the vagina is narrower, the nymphæ smaller, and the clitoris (Morgagni) reduced to the size of a small tubercle.\* Such conditions, palpably enough, are irremediable causes of sterility. Certain conditions of the system, and the abuse of toxic agents, may determine ovarian phlegmasia, and consequent structural changes, ending in atrophy, which, according to the extent that the organs are affected, may cause sterility. Chlorosis, phthisis, scrofula, the abuse of opium and alcohol (Peuch, Courty), act in this manner. If but a portion of the ovary remain healthy impregnation is possible. Fibroid degenerations, cysts, cancers, &c., act similarly, to the extent that the tissue of the ovary is involved, and contingently on the affection being unilateral or bilateral.

According to Chereau,† “it may confidently be asserted that there is not in the female an organ which presents a greater variety of pathological alterations than the ovary; inflammation and its consequences, bloody effusions, purulent collections, cancerous, fibrous, tubercular, cartilaginous, calcareous degenerations, and displacements, including hernia,” &c.

It is exceedingly difficult to diagnose the existence

\* *Mémoires pour servir à l'étude des Maladies des ovaires. Premier Mémoire*, p. 147.

† *Loc. cit.*

of these causes of sterility, more especially when the affection involves the entire extent of the structure of the ovary. Some light may be thrown on the investigation by the palpation and percussion of the abdominal walls, measurement, and rectal and vaginal examinations. The presence or absence of menstruation will furnish valuable indications. Regular and normal menstruation, with extensive disease of the ovaries, is comparatively rare. On this point Roubaud arrives at the following conclusions:—

1. Regular menstruation, that is to say, the secretion, the development, and the expulsion of a Graafian vesicle, may in some rare cases take place without menstrual hæmorrhage, and that absence to be the result of an idiosyncrasy. In these cases where fecundation is possible, menstruation is always disclosed by some general or local phenomenon.

2. Menstruation, comprising secretion, development, and expulsion of a Graafian vesicle, may take place, without menstrual hæmorrhage, in consequence of some morbid condition of the uterus. In these cases fecundation is possible, and menstruation is always evinced by some general or local phenomenon.

3. Regular menstruation, comprising the normal secretion, development, and expulsion of a Graafian vesicle, interrupted or suppressed by a disease of the ovaries, suspends or always delays the catamenial flow, and that absence of the menstrual hæmorrhage is never replaced periodically by any abnormal phenomenon whatever.

VITAL LESIONS OF THE OVARY AS A CAUSE OF STERILITY.—By these conditions are to be understood

such as result from causes which pervert the normal function of the ovary. M. Négrier (d'Angers) has studied this yet obscure subject minutely, and the conclusions arrived at by this authority are to the following effect:—

“1. The ovarian vesicles are capable of undergoing changes which, far from obscuring a knowledge of the functions of these organs (the ovaries), contribute to demonstrate the reality of diverse phases of their evolution.

“2. The alterations of the vesicles are incomparably more frequent than those of the parenchyma of the ovary, and under the latter classification I speak of the fibro-cellular and vascular tissue which constitutes the principal mass of the organ.

“3. The alterations of the ovarian vesicles are a common cause of sterility, and consist in an arrest of development; this is complete or partial.

“4. That arrest of vesicular evolution may determine a true abortion of the vesicles at any degree of their transformation.

“5. The consequences of incomplete or complete abortion present great differences in respect of their gravity.

“6. Ordinarily, complete abortion of the ovules and their vesicles does not cause accidents which compromise life, and the debris of the organ disappears more or less completely by resorption.

“7. Complete abortion may be the occasion of an inflammation, and consequent suppuration, leading to grave consequences.

\* *Recherches anatomiques et physiologiques sur les ovaires dans l'espèce humaine*, p. 117, *et seq.*

“8. Partial abortion, that is to say, the arrest of development of one of the constituent parts of an ovarian vesicle, determines an alteration more or less profound in the functions of other parts of the organ, and an alteration in their reciprocal bearings.

“9. Incomplete abortion, which takes place when the vesicles are only in the condition of a primary vesicle, appears to be the cause of most of the encysted dropsies of the ovary.

“10. The same partial abortions, when the vesicles have become fatty pouches, appear to be the origin of fibrous, cancerous, and other tumours of the ovary.

“11. Partial abortion of the vesicles, when they are in the state of yellow vesicles, is the source of encysted tumours of the ovary, containing matter of the appearance of butter.

“12. Finally, it is to these cases of fecundation, without separation of the ovum from its vesicle, that it is necessary to attribute the foetal productions which are found in the ovary, where they develop under the influence of vascular adhesions which they establish between themselves and the membranes which enclose them.”

*Malposition of the ovary* may be a cause of sterility, not, however, by interfering with normal ovulation, but by so altering the relative position of the ovary to the adjacent organs that the ovum is prevented entering the Fallopian tube, and thus descending into the uterus. Changes in the position of the ovary are described as *simple* or *complicated*;—simple, if the anatomical relations of the ovary only are altered; complicated, when it becomes engaged in a normal or accidental aperture. In the first place, strictly speaking, the malposition is *displacement*, in the second *hernia*.

•

*Displacements* of the ovary, according to their cause, may be of a twofold nature; on the one hand, when the determining cause of the altered relationship is in the organ itself, and on the other when it is the result of adventitious adhesions involving the neighbouring organs. In the first place, the mere increase in weight may determine an abasement of the organ; and this may be common to both organs. Sometimes, however, but one is affected, the opposite remaining healthy. The healthy one is, notwithstanding, dragged from its normal position by the weight of the diseased one operating upon it.

The second variety of ovarian displacements is more frequently met with, and this will be at once apparent on consideration of the great mobility of the ovaries, and the organs by which they are immediately surrounded. Malpositions of the uterus may certainly alter the position of the ovaries, but sterility could not be ascribed to the latter, in the presence of the former condition. The diagnosis of ovarian displacements, in the absence of enlargement and augmented weight of the organ, is difficult and obscure. Abdominal palpation, and vaginal and rectal examination, afford but equivocal evidence; and percussion cannot well define organs so susceptible of being moved even by loops of intestine. Menstrual hæmorrhage is altered in its type occasionally, but this applies equally to abnormal conditions of the uterus. A history of peritonitis, and subsequent sterility in a female formerly prolific, would have considerable significance in conjunction with other signs of ovarian disease or displacement. So far as treatment is to be conducted, it must be rather general than local.



*Hernia of the ovary* was a condition to which little attention had been directed until the time that Deneux directed attention to it.\* Soranus of Ephesus appears, however, to have been the first to have made mention of this condition. Haller, in 1755, recorded the thirteenth case of hernia of the ovary mentioned in the annals of medical science. Percival Pott relates a case of double ovarian hernia.† The following is an outline of Pott's case:—A young woman of twenty-three years of age entered St Bartholemew's Hospital, on account of two tumours situated in the groin, and causing so much pain that patient was unable to follow her ordinary avocation. Patient was of a vigorous constitution, had menstruated regularly, and was not incommoded save when the tumours were compressed in the act of stooping, &c. The tumours were without inflammation, soft, irregular on surface; easily moved, and placed in the tendinous orifices of the costo-abdominal muscles. Bleedings, purgatives, and attempts at reduction made by many surgeons, proved ineffectual, and operation was determined on. The skin being divided disclosed a thin membranous sac, in which was situated a body so like an ovary that mistake was impossible. In front of the abdominal ring an incision was made, and the organ was removed by a stroke of the knife. The same procedure was observed on the opposite side, and thus the two ovaries were removed. After that period the patient enjoyed good health; the menses, however, did not recur, obesity diminished, and the muscular system partook of a masculine vigour.

*Inflammation of the ovary* (ovaritis) sometimes sus-

\* Recherches sur les hernies de l'ovaire, Paris, 1843.

† Surgical Works, vol. I. p. 492.

pend the function of ovulation; furthermore, the intense suffering thus occasioned is of such a nature that sexual congress is rendered either difficult, or altogether impossible. Chronic ovaritis does not absolutely prevent impregnation, but it causes an irregularity of menstruation, which must necessarily influence conception.

Congestion of the ovary when intense is capable of acting temporarily so as to prevent normal ovulation. Apoplexy of the ovary in like manner, produced by physiological or pathological states, may operate similarly. The extent to which it will thus operate will depend on whether the ovary is totally or partially the seat of disorder. If the affection is confined to the parenchyma, ovulation may take place in the normal manner; but if the depth of the organ be equally invaded the hæmorrhagic infarction may lead to complete atrophy of the organ.

Phlegmasiæ and inflammations of the organs surrounding the ovary (hæmatocele), peri-uterine inflammation, pelvi-peritonitis, etc., may occasion infecundity by determining sympathetic hyperæmia of the ovary. Permanent adhesions may thus result which will act as incurable causes of sterility, as already indicated. Affections of this nature must be treated solely on general principles.

GENERAL CAUSES OF STERILITY IN THE FEMALE.—While in the vast majority of instances sterility is to be attributed to conditions affecting the genital system, cases sometimes occur in which the absence of manifest local disorders implies the presumption of some constitutional inaptitude for fecundation. The evidences,

however, which are furnished in this manner are of the most equivocal description. Thus frequently healthy-looking women, with their functions normal, are found to remain sterile, while delicate females exhibit remarkable aptitude for procreation. When there is a marked predominance of one of the temperaments over the others, fecundation seems less likely to occur. When the sanguine temperament predominates, it is apt to determine uterine plethora and hæmorrhage, circumstances, as we have seen, unfavourable to impregnation. In females in whom the lymphathic temperament predominates, as evinced by undue obesity, sterility is not unfrequent. The same obtains with the nervous temperament, as females affected with violent emotions are less apt to conceive than those of an equable temperament. This has evidently some relationship with spasmodic contraction of the uterus during coitus.

Hereditariness seems to exercise some influence on fertility; and recent observations demonstrate that consanguineous marriages are less fruitful than mixed ones.

Sterility is more frequent in cities than in rural districts, and more frequent among the rich than the poor, two circumstances which admit of the same explanation, viz., the excesses indulged in by the former, and the various other social exigences which thus undermine health, more especially in crowded cities, than in healthy rural districts.

Aptitude for fecundation does not manifest itself at the same age in all persons. The majority of all females conceive shortly after marriage; but others equally healthy remain sterile after marriage, for

many years, and then become mothers with a marked regularity.

An explanation of these cases, evidently of long sterility, is given by certain authorities, by the allegation that conception *does* take place in the vast majority, but that premature abortion is induced by various circumstances, conspicuous among which is to be found the syphilitic diathesis. When gestation proceeds to the extent of manifesting itself by the usual phenomena, there can be no obscurity on this point; but if the expulsion of the ovum takes place during the first days of fecundation, the matter will be less clear. Parent-Duchâtelet,\* referring to sterility of prostitutes, thus expresses himself: "I have spoken above of the irregularity of menstruation in some prostitutes, and of the interruption to this function which many circumstances offer; can such not be attributed to a veritable conception? That opinion, which has been given in my presence by many distinguished physicians and physiologists, acquires a great probability by the observations made by M. Serres, when prostitutes were observed in one of the divisions of La Pitié. I will here record the response made me by that academician. 'Abundant evacuation is rare in these females; but the young have their menstruation frequently retarded, and comes on coincidently with the expulsion of what they call a *bondon*. During two years, I paid no regard to that expression; but having directed my attention to embryology, I carefully examined these productions, and had no difficulty in recognising the human ovum; I have been able in a short period of time to gather many such masses, which were all

\* De la prostitution dans la Ville de Paris, 2<sup>e</sup> ed. p. 235 et 236

expelled at a period indicating a conception of five or six months.'”

In cases of anæmia and chlorosis, in common with the other functions of the body, those of the sexual organs are perverted and impaired, and hence irregularity of menstruation may operate as a cause of sterility. The indications of treatment will vary according as the anæmia and chlorosis may be the primary or secondary affection.

RELATIONSHIP OF MENSTRUATION WITH STERILITY.—

When the absence of menstruation is the consequence of an arrested development or atrophy of the genital organs, the sterility will be absolute and incurable. According to some authorities, the absence of menstruation is not only compatible with a perfectly normal appearance of the sexual organs, but also with fecundation. The absence, however, of the menstrual secretion is unfavourable to conception, and the restoration of the function is desiderated. In relation to menstruation, certain periods seem more favourable to conception than others. Thus Pouchet,\* in his theory of spontaneous ovulation, teaches that fecundation can take place only in the period comprised between the first and the twelfth day after menstruation. His general conclusions are summarised as follows:—“The Graafian vesicle (for there is almost always but one, which gives origin to the ovule), developes itself during the menstrual period. Then, either immediately after the cessation of the catamenial flow, or two, three, or four days after it has ceased,

\* *Théorie positive de l'ovulation spontanée et de la fécondation.* Paris, 1847.

that vesicle bursts and allows its contained ovum to escape.

"The ovum is then seized by the fimbriated extremity of the Fallopian tube; and slowly traverses the tube towards the uterus. I think that a period of from two to six days is requisite for the passage from the ovary to the uterus.

"Arrived in the uterus, it is there retained from two to six days by the *decidua* exuded on the mucous surface of the organ, towards the decline of the irritation which follows the menstrual period.

"If the ovum is not then impregnated by the seminal fluid of the male, it becomes detached with the *decidua*, which usually happens from the tenth to the twelfth day from the cessation of the menstrual flow.

"Experience having proved, in other mammalia, that the seminal fluid lodged in the interior of the genital organs of the females retains its prolific power during more than thirty hours, it is probably the same in the human species. Thus cohabitation may be succeeded by fecundation, though it happen two or three days previously to the arrival of the ovum in the uterus.

"But every sexual intercourse after the detachment of the *decidua*, and during all the time intervening between that process of detachment and the next menstrual period, is absolutely unfruitful.

"But, as we know that the *decidua* detaches from the tenth to the twelfth post-menstrual day, it consequently follows that conception can take place only during the period from the first to the twelfth day after menstruation."

Courty,\* in a less decided manner, remarks—"We are forced to conclude that in general, in the female, conception takes place only during the first eight or ten days following menstruation." The observations of Wagner, Leuchart, and Raciborski, and many others, have shown that the dogmas of Pouchet and Courty are too absolute, inasmuch as impregnation has been observed to take place at all the intermenstrual periods; this, however, M. Coste endeavours to explain, by asserting that ovulation may be incompletely performed notwithstanding the perfect regularity of the menses, and that thus the arrival of the ovum in the uterus may be postponed. All the circumstances, however, justify the conclusion, that the period at which impregnation is most apt to take place is that comprised between the first and the twelfth day after the cessation of the menses.

VENEREAL EXCESSES AS A CAUSE OF STERILITY.—Excessive coitus may operate as a cause of sterility by blunting the special sensibility of the organs, determining congestions, or by the production of an abnormal excitation. These are the causes, no doubt, so largely operative in determining apparent sterility in prostitutes. The direct effect of excess of coitus on the genitals has been described by Parent-Duchâtelet† in the following terms:—"Prostitutes present frequently, in the thickness of the *labia majora*, tumours which commence by a small nucleus and enlarge by tumefaction at each menstrual period; these tumours are never observed save on one side at the same time, and if left

\* De l'œuf et de son développement dans l'espèce humaine, p. 84.

† De la prostitution dans la Ville de Paris, t. I. p. 250.

to themselves acquire a considerable volume. They are indolent, and do not embarrass the female save in a purely mechanical manner. It is rare that these tumours are fibrous; most frequently they are full of a very thick albuminous matter or a honey-like substance. Sometimes they are developed at the base of the nymphæ; the latter are of the same nature as the others, but more painful, and never attain to a great size. The mode of life brings on inflammatory action, which develops itself sometimes in these tumours, and cause them to burst, but they soon refill, and thus determine disagreeable fistulæ. They cannot be cured save by excision of the cyst, and setting up a new action. All who have had occasion to open these cysts, or to excise these tumours, are agreed on the extreme fetidity of the liquid which they contain. That fœtor is inherent to the contents, and cannot be ascribed to the presence of air.

“ Nothing is more frequent than the occurrence of abscesses in the *labia majora*. They alway observe an acute course, and terminate as in other females subject to them. It is not the same with those which develop in the perinæum, a part which, according to some observers, is very thin in prostitutes; they degenerate frequently into *fistulæ* very difficult to cure, and afflict individuals thus affected frequently during their lifetime; at other times they contract and heal, and do not offer an impediment to sexual congress. At the period at which I made my investigations in the prison, there were five or six females with this infirmity; the physicians of that establishment estimated that there would be in Paris thirty prostitutes following their avocation with that disgusting infirmity. Who would believe that



*fistulæ* have been known to heal under such circumstances, calculated to cause and aggravate them?

“According to the observations made in infirmaries and prisons, these recto-vaginal *fistulæ* coincide almost always with phthisis; they are frequently associated likewise with engorgement of the labia majora. That engorgement is not an ordinary infiltration of oedema; it is hard and resisting, and does not yield to pressure, neither does it occasion pain.

“That infirmity acquires sometimes such dimensions in these females that they are unable to pursue their avocation, and that, become thus a charge to themselves, they desire an asylum in which to terminate their sad existence; they ordinarily choose the prison infirmary.”

In a class of cases venereal excesses induce a peculiar alteration in the mucous membrane of the vagina, which is not without its influence in the causation of sterility. It is well known that a mucous surface exposed to the external air, or to the action of friction, undergoes a change whereby the characteristics of the epidermis are induced; excessive coitus seems to have, in certain cases, a similar influence on the mucous membrane of the vagina, which becomes thus dry and hard. This condition is in all probability also induced, in a great measure, by the frequent use of detergent and astringent lotions. It is attended by diminished special sensibility of the sexual organs, a condition which, in common with the dryness, vaginal examination with the finger instantly reveals. In the treatment of this disorder, preliminary to the adoption of any special method, the use of astringent injections should be at once interdicted. Then emollient preparations may be

introduced into the vagina in the form of pessaries; small doses of iodide of potassium may be administered internally, and the mucous secretion may also be stimulated by mild emollients. When the change in the mucous membrane is complete little can be done to remedy it.

Mental affections, according to Esquirol, are exceedingly frequent among prostitutes; but this authority has sufficiently established by statistics, based on his experience at the Salpêtrière, that erotic delirium is exceedingly rare in this class of lunatics.

**INFLUENCE OF FRIGIDITY ON FECUNDATION.**—By the term frigidity is to be understood an absence of the genital sense, independently of hyperæsthesia and other conditions which render the performance of the sexual act on the part of the female either repulsive or painful. Roubaud has dealt at considerable length on the subject, in its bearings on the matter under consideration. It is not to be disguised, however, that genital sensibility is not essential to impregnation, as sufficient testimony exists to the fact of fecundation having taken place under the influences of repulsion or direct violence. Notwithstanding this, the absence of genital sensibility does seem to operate in some instances, by interfering with, or perverting the spasmodic movements of the uterus which occur consentaneously with coitus, and which seem to favour the reception of the seminal fluid.

Roubaud recognises five orders of frigidity as follows:—

- 1st, Natural frigidity, due to vices of conformation.
- 2d, Idiopathic frigidity.

3d, Symptomatic frigidity.

4th, Consecutive frigidity.

5th, Sympathetic or moral frigidity.

The evolution of the genital sense is immediately dependent on the anatomical and physiological integrity of the parts concerned, even as in the male. In the female the bulbs of the vagina are the analogues of the bulb of the urethra in the male; and the clitoris, as with the penis in the opposite sex, is furnished with two cavernous bodies communicating at their base with the bulbs of the vagina through the intervention of a plexus of veins. Under the influence of venereal excitation, the bulbs become engorged with blood, which is conveyed, by the intermediate network referred to, to the cavernous bodies and glans of the clitoris, sensibility being thus heightened. Under this influence the constrictor muscle of the vagina, as with the bulbo-cavernous in the male, contracts, and thus presses on the bulbs of the vagina. It will be obvious then, that if the special function of any of these structures is perverted, or if they happen to be altogether wanting, that the venereal erethism will be correspondingly effected.

Roubaud has thus referred the causes of his first order of frigidity to affections, or anomalies of the clitoris.

While arrested development of this organ may diminish genital excitability, it does not follow that the converse is absolutely true. Parent-Duchâtelet,\* for instance, records the following case:—"At the period in which I made my observations there were in Paris three prostitutes whose clitores presented a

\* *Op. cit. sup.*

notable enlargement. The clitoris of one of them was exceptionally large, measuring in length eight centimètres (three inches), and in thickness it equalled the index finger. A well-formed glans covered with a prepuce, under which sebaceous matter existed, was apparent. The young woman was twenty-three years of age, had never menstruated, and exhibited no trace of breasts. It is probable that there was an absence of the uterus, for vaginal examination revealed but a small tubercular projection without manifest aperture, and rectal examination gave similar negative evidence; unfortunately, examination by the speculum was not conducted. The subject of observation had been a long time at the prison of Madelonnettes, and the physicians of that establishment had long desired to discover what influence the abnormality exercised over the genital passion; but the woman always asserted that, in this regard, she was equally indifferent for either sex, that she had abandoned herself to prostitution on account of privation. I watched this person during six months, questioned many persons regarding her, and the reply never varied. On leaving the prison she replied in like manner to the medical officers of the dispensary, who reported the case to me. That indifference for the opposite sex, despite the great development of the clitoris, may possibly be due, in some degree, to the probable absence of the uterus and its appendages."

In the second variety of frigidity, Roubaud recognises as the cause, paralysis or diminished sensibility of the organs. In the third, age, constitution, temperament; various nervoses, such as epilepsy, hysteria, catalepsy, &c. In the fourth, the variety of sexual repugnance

manifested after child-bearing; as due to venereal excesses, alcoholic excesses, narcotics, &c. In the fifth, moral causes resulting from mal-assorted marriages, disappointments, &c.

*Artificial impregnation.*—It remains but to glance at the subject of artificial impregnation at first attempted by Swammerdam, and afterwards by Roesel during the last century. Their experiments were not attended with success. Towards the end of the same century Spallanzani succeeded, however, in artificially impregnating some of the lower animals.

Hunter records the first artificial fecundation of a female in 1799, in "The Philosophical Transactions." The subject seems to have lapsed into oblivion, from which it ought perhaps not to have been rescued, until Dehaut, in 1865, revived its consideration.

In 1866, Marion Sims,\* dwelt at length on the operation, and cited a case of success.

The "Réforme Médicale" gives two accounts of successful artificial impregnations, the one by Dr Lesneur, and the other by Dr Gigon of Angouleme.

In 1868 Girault collected (l'Abeille Médicale) ten cases of successful artificial impregnation in the human female, the first as far back as 1838.

As a therapeutical means, a procedure so subversive of female delicacy cannot fail to be always regarded with feelings of just repugnance.

\* Uterine Surgery.

## INDEX.

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### A.

- Abdominal muscles, paralysis of, effects on micturition, 25.  
Abercrombie, Dr, on dreams, 172.  
Abscess of the labia majora, 256.  
Abuse of the genitals, effects of, 134.  
Abyssinian priest, Gregory, on circumcision, 175.  
Accupuncture of the prostate, 173.  
Acton, Mr, on seminal reabsorption, 182; on *clergyman's sore throat*, as a symptom of spermorrhagia, 118.  
Adhesions of the labia majora, 256.  
Alcohol, its influence on reflex excitability, 152; in production of urethral discharges, 253.  
Althaus, Dr, on galvanism in vesical paralysis, 30, 31.  
Amaurosis ('*Ἀμαυρόω*, to darken), as an effect of masturbation, 97.  
Amussat, his case of absence of the vagina, 257, 258.  
Anæmia from sexual excesses, 108.  
Antimonial poisoning, impotency from, 239.  
Appetites, natural instinct, 177; Aristotle on, 177; Cicero on, 178; Dugald Stewart on, 178; Strauss on, 178.  
Arsenical poisoning, impotency from, 239.  
Aspermatozie, Hirtz on, 69.  
Ataxy (*α*, priv., *τάσσω*, to order), Dr Bradbury's case of, 99; its influence on the genitals, 100; Hippocrates on, 79, 99; Celsus on, 99.  
Atresia (*ἀτρέμεια*, immovable), congenital of the vagina, 260.  
Atrophy of the testicles, alleged from disuse, 75.  
Azoospermia from excessive coitus, 205; idiopathic, 209.

### B.

- Bacon, Dr M'Kenzie, on castration as a cure for epilepsy, 126.  
Barclay, Dr, on "spermatorrhœa," 97.  
Barry, Dr, case of worms in the bladder, 43.  
Bell, Sir Charles, on the sphincter vesicæ, 11.  
Belladonna in the treatment of enuresis, 152.  
Bernard, his experiments on the sympathetic nerve, 8, 9.

- Bladder, anatomical structure, 2, 3; its mucous membrane, 4; nervous distribution to the, 4, 5, 6; paralysis of, retention of urine from, 19, 25; treatment, 25, 26, 27, 28, 29; Mr Hutchinson on, 26; catheterism in, 26; cystitis in, 26, 27; deposit of "lithates and phosphates in," 28; normal function of, on what dependant, 19; malformations of the, as causes of impotency, 224, 225, 226.
- Blandin on congenital absence of the testicles, 197.
- Blistering in treatment of self-pollution, 173.
- Bougies, their employment in the treatment of seminal incontinence, 163.
- Bradbury, Dr, on treatment of spermorrhagia, 167.
- Bromine, toxic effects of, impotency from, 240.
- Brown, Mr Baker, his connection with clitoridectomy, 127, 128.
- Budge, his experiments on dogs, 5, 6; his views of the sphincter vesicæ, 10; on the connection of the cerebellum and testes, 81.
- Burdach on atrophy of the testes from cerebral dropsy, 112.

## C.

- Carcinogenesis** (*καρκινος, γένεσις*), molecular, 38.
- Caffein**, its influence on reflex excitability, 152.
- Calculi**, a cause of enuresis, 51.
- Camphor** in treatment of enuresis, 153; as an anaphrodisiac, 168; bromide of, 169; in strangury, 42.
- Cantharadin**, absorption of, as a cause of strangury, 42.
- Cantharides blister**, application of, causing seminal emission, 143.
- Cantharides**, internal administration of, causing urethral discharges, 254.
- Casper** on zoosperms, 58, 59, 60; cryptorchids, 196.
- Castration**, Sir Astley Cowper's case of, 66; Krahmer's case of, 67; influences of, 81; *caustic*, employment in seminal incontinence, 163; cephalalgia, due to excessive coitus, 112.
- Cænæsthesia** (*κοινός*, common; *αἰσθησις*, feeling), 47, 48; relation of the, to hysteria, 49; to metromania, 50.
- Cerebellum**, influence on the genital organs, 82; Serres on the, 82.
- Chambers**, Dr King, on seminal emission, 136.
- Charcot** on hysteria, 49.
- Chloral hydrate**, its influence on reflex excitability, 151; in the treatment of seminal incontinence, 168.
- Chlorosis** as a cause of impotency, 229; case of, 230.
- Circumcision**, antiquity of, 174.
- Circocoele** (*κίρκος*, a ring; *κηλη*, a tumour), 107, 108.
- Civiale** on coitus, 181; on procreative capacity of cryptorchids, 192; on prostatic cauterisation, 167; on simple urethral discharges, 253.
- Climate**, influence on reproductive faculty, 94.
- Clitoridectomy** (*κλείω*, to shut; *τεμνω*, to cut off), 127.
- Clitoris**, excessive development of the, 256.

Cloquet on cryptorchids, 195.  
 Cock, Mr, on cryptorchids, 194.  
 Coitus, Feuchtersleben on, 181.  
 Congestion of the genitals, influence on seminal secretion, 91, 101.  
 Constitution, influence on reproductive faculty, 92.  
 Continence, physiological relations of, 179; Galen on, 183.  
 Copaiba in spermorrhagia, 171.  
 Copland on sterility and allied diseases, 191.  
 Courtenay, Mr, on employment of lunar caustic in spermorrhagia, 164.  
 Cowper, Sir Astley, his case of castration, 66.  
 Cowper's glands, functions of, 54, 68.  
 Cubebs in spermorrhagia, 171.  
 Cullerier on gonorrhœa (*Γονή*, semen; *πίω*, to flow), 72, 73.  
 Curling on cryptorchids, 192.  
 Cryptorchids, 192.

## D.

Davy, Dr, on the functions of the vesiculæ seminales, 60, 62, 63; analysis of his cases, 61.  
 Dawson, Mr, and Dr King Chambers, 234.  
 Defecation, is semen normally discharged during, 55; nature of urethral discharge during, 71, 72, 73.  
 Dementia, senile, Dr Brown on, 114.  
 Demarquay on vesical absorption, 159.  
 Deslandes on the influences of coitus, 130; sexual congress, 186.  
 Detrusor urinæ muscle, 3.  
 Diabetes, impotency from, 231.  
 Diet, appropriate in treatment of enuresis, 161, 162.  
 Digitalis, its influence on reflex excitability, 152; as an anaphrodisiac (*α, priv.*; *ἀφροδισία*, Venus), 168.  
 Dogs, Budge's experiments on, 5, 6; Gosselin's experiments on, 67.  
 Douglas, Mr James, on prostatic cauterisation, 164; his case of spermorrhagia, 165, 166, 167.  
 Dreams, Abercrombie on, 172; Tissot on, 172.  
 Dubois, his connection with clitoridectomy, 127.  
 Duct, Whartonian, Meryon's observations on, 9.  
 Dumas on the vasa deferentia in frogs, 56.  
 Duplay on the effects of hydrocele on the spermatie function, 206.  
 Durham, Mr, on cryptorchids, 194.  
 Dysspermatismus Serosus, 205.

## E

Egypt, circumcision in, 175; circumcision in Ethiopia, 175.  
 Ejaculator seminis muscle, 12.  
 Emotion, mental, influence on secretion, 47; organic muscular fibre, 49.



- Entonic impotency, 207.  
 Enuresis ('*Enurpiu*, to be incontinent of urine), 46 to 190 ; of a somatic nature 51, 52 ; periods of most frequent occurrence, 51 ; etiology of, 51 ; Desaul on, his psychical treatment of, 52 ; from debility due to sexual excesses, 53 differentiation of, from spermorrhagia, 53 ; nocturnal, analogies to seminal incontinence, 143.  
 Epididymitis from masturbation, 106 ; treatment of, 202 ; as a cause of urethra discharge, 251.  
 Epilptic misemission, 208.  
 Epilepsy, as due to masturbation, 115, 116.  
 Epispadias, 192 ; procreative capacity of, 198.  
 Erection, physiology of, 213.  
 Erethism, seminal, its initial stage, 147.  
 Ergot of rye, in treatment of enuresis, 153 ; of spermorrhagia, 171.  
 Erotomania ("Eros, love ; *μανία*, madness), 111.  
 Esquirol on the sexual appetite, 179 ; the insanity of masturbation, 115.  
 Ethiopians, semen of the, according to Herodotus, 69.  
 Excessive seminal emission a pathological state, 96.  
 Excitement, influence of, on seminal secretion, 55.

## F

- Fabricius, his case of malformation of the penis, 199.  
 Fallopian tubes, obstruction of the, 263, 281 ; diagnosis, 281.  
 Faradisation in treatment of seminal incontinence, 176.  
 Fecundation, influence of disease on, 205.  
 Female impotency and sterility, 255.  
 Feuchtersleben on period of puberty, 86.  
 Foderè, his case of malformation of the penis, 199.  
 Follin on crypsorchids, 195.  
 Foote, Jesse, his criticism of Hunter, 131.  
 Frank of Vienna on continence, 179.  
 Frigidity as a cause of impotency, 263 ; influence of, on fecundation, 297.  
 Frogs, peculiarity of vasa deferentia in, 56.  
 Function, normal, how maintained, 10.  
 "Functional," the term, 38.

## G

- Galvanism in treatment of enuresis, 154 ; treatment of spermatie incontinence, 175.  
 Gall, Dr, on continence, 183.  
 Generation, the focus of, 48 ; relation to the organism, 48.  
 Genital sense, Rowbaud on, 182 ; organs, wasting of, from accident to the cerebellum, 82, 83.  
 Goddard on procreation of crypsorchids, 193 ; on the treatment of epididymitis 201 ; on the constitution of semen in epididymitis, 68.

- Good, Mason, his varieties of strangury, 41; on sexual abstinence as a cure for sterility, 207, 208.  
 Gonorrhœa, Cullerier on, 72.  
 Gosselin, his experiments on dogs relative to seminal fluid, 67; on reabsorption of semen, 75; on sterility from epididymitis, 200, 201.  
 Greek Church, its view of fornication, 177.  
 Gregory, the Abyssinian priest, on circumcision, 175.  
 Goupil on infant masturbation, 126.

## H.

- Habit, influence of, on reproductive faculty, 94.  
 Hæmorrhoids, operation for, a cause of retention of urine (*ἄλμα*, blood; *ῥεω*, to flow), 35.  
 Haller on seminal reabsorption, 77; his case of malformation of the penis, 199.  
 Hake, Dr, on seminal reabsorption, 78.  
 Hartsœker on spermatozoa, 64.  
 Hassall, Dr, on the symptoms of "spermatorrhœa," 110.  
 Heart, affections of the, ascribed to spermorrhagia, 119.  
 Heidenhain on the sphincter vesicæ, 12.  
 Herodotus on the semen of Ethiopians, 69.  
 Hicks, Dr Braxton, on vesical absorption, 159.  
 Hippocrates on humid tabes, 79.  
 Hialop, Mr, his case of urethritis, 104.  
 Hodgson, Dr Decimus, on the prostate gland (*Πρό; ἰστῆμι*, to stand), 10.  
 Howship, his case of paralysis, 25; on disease of the vesiculæ seminales, 137.  
 Hunter on the vesiculæ seminales, 63; on the fluid discharge from the urethra at stool, 69; cryptorchids, 192.  
 Hydrocele (*ὕδωρ, κήλη*) of the vesiculæ seminales, 140; symptoms, 140; effects of, on the spermatic function, 206.  
 Hyoscyamus, its therapeutic effects, 153.  
 Hyperæsthesia, genital, a cause of seminal incontinence, 134.  
 Hypertrophy of the labia majora, 256.  
 Hypogastric plexus, distribution to pelvic viscera, 8; connection of, with aortic and solar plexuses, 21.  
 Hypospadias, 192; procreative capacity of, 197.  
 Hysteria (*Ἱστέρια*, the womb), etiology and pathology of, 49.

## I.

- Idiopathic azoospermia, 209.  
 Idiosyncrasies, their influence on the reproductive faculty, 91.  
 Impotency, definition of, 212; entonic, 207, 208; idiopathic, from defect of energy, 226; Montaigne on the cure of, 215, 216; objective causes of, 215; physical causes of, 218; psychical causes of, 214; treatment of, 218; symptomatic, 228.

## U

- Impotency in the female; 255, 256; from frigidity, 263.  
 Impregnation, artificial, 300.  
 Incontinence, physiological relations of, 179.  
 Infecundity, 263.  
 Insanity, relation to seminal incontinence, 109, 110; sexual, Maudsley on, 114; Esquirol on, 115; Dr Ritchie, 115; summary of the subject, 117.  
 Iodine, toxic effects of, impotency from, 240.  
 Iron, perchloride of, in treatment of uterine excrescences, 265.  
 Irritable bladder, 38; a functional disease, 38; treatment of, 40; causes of, 39; "nervousness," dyspepsia, etc., 39; symptoms of, 40.  
 Ischuria (*ἰσχμ*, to check; *ουρον*), relation to section of the spinal cord, 19, 20.

## J.

- Jarjavay on cryptorchids, 166.  
 Jérôme, Saint, on male precocity, 241.

## K.

- Kirkes on seminal secretion, 54, 55, 56.  
 Kölliker on seminal reabsorption, 77.  
 Kraus on properties of seminal fluid, 68, 70.  
 Kupressow on the sphincter vesicæ, 12.  
 Kuss, Professor, on the differentiation of gonorrhœa, 240.

## L.

- Labia majora, hypertrophy of the, 256.  
 Lallemand on the connection of the cerebellum and genitals, 83; on prostatic cauterisation, 164; on seminal reabsorption, 74, 75; on seminal secretion, 189.  
*Lancet*, Editorial, on sexual congress, 178, 179.  
 Larrey on the relation of the testicles to the cerebellum, 82, 83.  
 Lawrence, Mr, his case of worms in the bladder, 43.  
 Lead, preparations of, in treatment of spermorrhagia, 169; poisoning, impotency from, 237, 238.  
 Leucorrhœa, its analogies to gonorrhœa, 245  
 Liegeois, on sterility from epididymitis, 201  
 Lithic acid diathesis as a cause of irritable bladder, 39.  
 Locomotor ataxy, Hippocrates on, 79; Bradbury on, 99.  
 Lucretius on enuresis and seminal incontinence, 89.  
 Lupulin on treatment of seminal incontinence, 170.

## M.

- Mackenzie, Dr Bacon, his case of castration, 126.  
 Majendie on the administration of phosphorus, 170.

- Mason Good, his varieties of strangury, 31.  
 Marasmus as a cause of impotency, 229.  
 Marsham on circumcision, 174 ; Macrones, circumcision among, 175.  
 Marshall on cryptorchids, 194.  
 Masturbation, its evil effects accounted for, 133, 162.  
 Material correlation, law of, 38.  
 Mauriac, M., on epididymitis, 108.  
 Maudsley on the insanity of puberty, 112.  
 Memory, how influenced by excessive seminal emission, 97.  
 Menstruation, its relationship with sterility, 292, 293.  
 Mental states, seminal incontinence in relation to, 109.  
 Mercury, bichloride of as a vesical injection, 154.  
 Meryon, his experiments on the sympathetic, 9.  
 Metromania (*μητέρα*, relating to the womb, *μαινα*), 50 ; Louyer-Villermay on, 50 ; Helwich on, 50 ; due to pathological states, 50.  
 Micturition partly voluntary, partly involuntary, 2.  
 Misemission, epileptic, 208 ; anticipating, 233.  
 Monorchids, 192 ; procreative capacity of, 197.  
 Morality, its possible conflict with physiology, 176.  
 Morgagni on the fluid discharged from the urethra at stool, 73.  
 Morphia, its influence on reflex excitability, 152.  
 Mucous membrane of the bladder, its variety, 4.  
 Myosis, paralytic (*Μυω*, to contract), 24.

## N.

- Nervous distribution to the bladder, 4 ; nervous system, impotency from affections of the, 235 ; excitability, influence of repeated stimuli on, 53.  
 Nymphomania (*Νυμφη* ; *μαινα*), 128 ; Richerand on, 129.  
 Nux vomica in the treatment of enuresis, 153.

## O.

- Old age, retention of urine from, 31 ; its pathology, 32.  
 Onanism, Tissot on, 172.  
 Orgasm (*ὄργασμ*, to swell,) venereal, absent in certain cases of spermorrhagia, 135.  
 Orchitis from gonorrhœa, 137.  
 Otaheite, circumcision in, 174.  
 Ovary, congestion of the, 289 ; displacement of the, 287 ; hernia of the, 288 ; inflammation of, 288 ; vital lesions of the, 284, 285 ; malposition of the, 286.  
 Ovid on accupuncture, 173.  
 Ovulation, abnormalities of, 282, 283 ; Roubaud's conclusions regarding, 284.  
 Oxalic acid diathesis as a cause of irritable bladder, 39.

## P.

- Palpitation of the heart, an indication of debility, 23.
- Paraplegia, temperature of the body in cases of, 93 ; (*Παραπληγία*, benumbing of parts—*παρα*, verb), its influence on the pelvic viscera, 23.
- Partridge on cryptorchids, 193.
- Passions, their influence on the reproductive faculty, 93.
- Paresis, diminished, sterility from (*παρεσις*, a letting go), 206.
- Penis, sympathetic nerves of the, 8 ; abnormality of the, as a cause of impotency, 220, 221 ; Petit on, 222.
- Percival, his treatment of strangury, 42.
- Perineal muscles (*Περινία*, to flow around), actions of the, 11, 12.
- Peripheral irritation, a cause of epilepsy, 125.
- Pessaries, their employment in uterine displacements, 272.
- Phallorrhœa (*Φαλλός*, a penis; and *ρῆμα*, to flow), 240.
- Philips, Benjamin, on the fluid discharge from the urethra at stool, 72 ; on sexual debility, 136.
- Phimosia (*Φίμωσις*, a muzzle), congenital, operation for, 173, 174.
- Phosphorus in treatment of spermorrhagia, 170.
- Phrenic focus, 48.
- Phthisis, as due to masturbation, 118.
- Pickford on seminal emission, 79, 98.
- Planque on male precocity, 241.
- Polygamy, Montesquieu on, 94 ; Chervin on, 94.
- "Pollution," Roubaud on, 135.
- Potash permanganate, as a vesical injection, 164 ; chlorate, as a vesical injection, 154.
- Potassium bromide, as an anaphrodisiac, 169, 170.
- Powell, his case of hair in the bladder, 161.
- Precocity, male, 241 ; treatment of, 242.
- Prevost on the vasa deferentia in frogs, 56.
- Prepuce, affections of the, reacting on spinal cord, 141 ; malformations of the, as a cause of impotence, 223.
- Priapism (*Πρίαπτος*, the penis), in cases of paraplegia, 23 ; pathology of, 24, 227 ; Roubaud on the treatment of, 82 ; from injuries of the spinal cord, 112.
- Procreative capacity, limits of, 65.
- Prostate gland, chronic inflammation of the, 103 ; nerves of the, 8 ; impotency from affections of the, 233.
- Prostatorrhœa, 248 ; symptoms, 248 ; case of, 249.
- Prout on the prostatic secretion, 70.
- Psychical (*Ψυχική*) impressions, influences of, on nutrition, 10 ; influences on seminal secretion, 84, 142 ; influences on lactation, 90.

Puberty, characteristics of, 86; *Feuchtersleben* on, 86; *Letourneau* on, 86; *Cabanis* on, 88; *Mason Good* on, 87; *Lucretius* on, 89; Insanity of, *Maudsley* on the, 112, 113, 114.

## Q.

Quack literature, influences of, 111.

Quacks, *Dr Mapother* on, 117.

Quinine, its influence on reflex excitability, 151.

## R

*Rayer* on seminal emission during defæcation, 71.

Rectum, affections of the, their influence on the sexual organs, 142.

Reflex paresis, diminished sterility from, 206; *Schulz* on, 206.

*Reid*, *Dr John*, on dreams, 172.

*Remak*, fibres of, their influence on blood-vessels, 10.

Retention of urine, synonyms of, 1; physiological, 15; from mental emotion, 17; from vesical paralysis, 19; from spinal paralysis, 24; when absolutely complete, 25; from old age, its etiology and pathology, 31; its diagnosis, 32; its treatment, 33; from over distension of the bladder, 34; from reflex irritation, 34; case of, 35; from shock, 36; diagnosis and treatment, 37.

*Rokitansky* on catarrh of the *vesiculæ seminales*, 138; on double penis, 199.

*Rousseau* on his passions, 105.

*Russ* and *Susini* on vesical absorption, 158.

*Rye*, ergot of, in spermorrhagia, 171.

## S.

Satyriasis (*Σάτυρες*, a satyr), 227; physical production of, 83, 111; in locomotor ataxy, 100.

*Sayre*, *Dr*, his cases of reflex paralysis 119, 120, 121, 122, 123, 124.

*Schenck* on the sexual appetite, 179.

Seasons, their influence on the reproductive faculty, 95.

Section of the spinal cord, its relation to ischuria, 19, 20.

Secretion of the prostate, *Cowper's* glands, and *vesiculæ seminales*; can they occur independently one of another? 66.

Semen, its secretion by the testicles, constant or intermittent? 54; reabsorption of, theory examined, 55, 74, 76, 77, 78, 80; its mode of excretion, 55; by what organs secreted, 54; composition of, 55; how influenced by venereal excesses, 68; its emission in health, 85, 98, 147.

Seminal emission a pathological state, 85.

Sensory nerves, their impressions transmitted by molecular action, 47.

Sexual congress, its influence on the genital functions, 173, 176, 177, 180; excesses, and masturbation, correlation of symptoms, 129; "Editorial" of *Lancet* on, 184, 185; criticism of, 187.

- Sims, Marion, on uterine displacements, 271.  
 Smith, Dr, on phthisis, as due to masturbation, 118.  
 Solly, Mr, his case of spermorrhagia from spinal injury, 101.  
 Somatic impressions (Σῶμα, the body), their influence on nutrition, 10; on nervous equilibrium, 46.  
 Sokorodin on the centre of vesical innervation, 6, 7.  
 Spasm of the bladder, 15; symptoms, 16; treatment, 16; urethra, 17; Civiale's cases, 17, 18; etiology of, 18; ureter, 15.  
 Spermatic incontinence, its symptoms, 46.  
 Spermatozooids (ζῶον), 56; first described by Leuwenhoeck, 64; Valentin, Schwann, and Ponchit on, 64; influence of poisons on, 64.  
 Spermorrhagia (Σπέρμα; ῥήγνυμι, to break forth), 46 to 190; its varieties and causes, 132, 136; diagnosis of, 148; prognosis, 149.  
 Sphincter vesicæ, 3; Kupressow on, 12; Heidenhain on, 12; Bell, Sir Charles, on, 11.  
 Spallanzani on artificial impregnation, 198.  
 Splanchnic (Σπλαγγχνον, a viscus), nerves, contradistinguished from the branches of the sympathetic, 24.  
 Steel, tincture of, in enuresis, 153; in spermorrhagia, 171.  
 Sterility in the male, 191; definition of, 191.  
 Sterility from disease, 199; relative, 210; in the female, 255; general causes of, 289, 290, 291.  
 Sterility, relationship with menstruation, 292, 293.  
 Stimulation, law of emotional, 47.  
 Strangury (Στράγγξ, a drop; οὐρῶν) 38; diagnosis of, 41; varieties, 41.  
 Stricture, sterility from, 202.  
 Strychnine in enuresis, 163; in spermorrhagia, 171.  
 Suppositories, sedative, in the treatment of spermorrhagia, 173.  
 Sympathetic ganglia, connection with motor and sensory nerves, 7; nerve, Bernard's experiments on the, 8, 9; Meryon's experiments, 9; Valentin on the, 21.

## T.

- Tabes, humid, Hippocrates on, 79; Celsus on, 90; a cause of impotency, 229.  
 Tanner, Dr, his case of anticipating misemission, 235.  
 Thompson, Sir Henry, on vesical absorption, 155.  
 Testicles, do they constantly secrete semen, 54; atrophy of the, from disease, 75; chronic phlegmasia of the, from prolonged excitation, 102; symptoms, 105; their relative position in health, 107.  
 Teevan, Mr, on "true spermatorrhœa," 136.  
 Temperament, influence of, on the reproductive faculty, 192.  
 Tilt, Dr, on vesical absorption, 159.  
 Toxæmia, impotency from, 237.  
 Trichiasis, Gælicke on, 161; Scultetus on, 161; Hans Sloane on, 161.

- Tripier on seminal incontinence, 147.  
 Trousseau on seminal emission, 98, 132; erethism ('Ερεθισμός, to vex), 144; the relation between enuresis, epilepsy, hypochondriasis, and insanity, 146.  
 Trousseau, his rectal pessary in the treatment of spermorrhagia, 189.  
 Tubercular affections of the testicles, 203.

U.

- Ureter, distribution of sympathetic nerves to the, 2; spasm of the, 15.  
 Urethra, mucous membrane of the, 13; coarctation of the, from preternatural excitation, 103.  
 Urethral discharges, anomalous, 244.  
 Urethritis, simple, constitutional causes of, 252; from prolonged genital excitation, 102; Civiale on, 103; simple, Diday on, 247.  
 Urinary canal, extent of the, 1.  
 Urine, expulsion of, a reflex act, 1; obstruction to flow of, physiological, pathological, and mechanical, 13, 14; incontinence of, relation to spinal nerves, 21, 162; profuse secretion of, in hysteria, 145; is semen removed with the? 55, 73.  
 Uterus, congenital absence of the, 263; symptoms, 265; conicity of the neck of the, 265; treatment, 265; congestion of the, 277; displacements of the, 268, 269; treatment, 272, 273; false membranes of the, 278; flexions of the, 274; fibrous tumours of the, 277; morbid secretions of the, 278; neck of the, hypertrophy of, 265; warty excrescences of the, 265; treatment, 265; congenital closure, 266; pathological closure, 266; exaggerated elevation of the, 270; prolapsus of the, 270; versions of the, 270; influence on fecundation, 271; surgical extirpation of the, 264.  
 Uterine canal, stricture of the, 266, 267; calculous impaction of the, 267; spasm of the, 268; hæmorrhage, idiopathic, 279; treatment, 280; passive, 280; treatment, 281; polypi, 277.  
 Uterine ulcerations, Burdach on, 82.  
 Uvula vesicæ, 4.

V.

- Vagina, abnormal communications of, with other organs, 261; atresia of the, 260; inflammatory hyperæsthesia of the, 261; membranous partitions in the, 260; neuralgia of the, 262; spasm of the, 261; stricture of the, 259; treatment of, 259; tumours of the, 261.  
 Valentin on the purpose of coitus, 198; on the physiology of the sympathetic, 22, 22.  
 Varicocele *varus*, knotted, and *κάλυ*, a tumour) due to masturbation, 106; diagnosis of, 107.  
 Vas deferens, sympathetic nerves of the, 8.  
 Venereal excesses, a cause of sterility, 294, 295.  
 Vesical paralysis from shock, 30; injections, 154; vesical absorption, 160.



Vesical innervation, centre of, 6, 7, 13 ; vesicles of evolution, 56.

Vesiculæ seminales, sympathetic nerves of the, 8 ; are they merely reservoirs of semen? 54, 55, 57 ; functions of the, 56 ; as secretory organs, 57 ; inflammation of the, 139 ; Hunter and Bransby Cooper on their functions, 57 ; Milton, Casper, and Duplay on their functions, 58, 59.

Voice, alleged influence of seminal fluid on, 80.

Volition, influence of, on micturition, 1.

#### W.

Wernich on ergot of rye in vesical paralysis, 29 ; poisoning by ergot, and condition of the bladder in, 29.

Whartonian duct, Meryon's observations on the, 9.

Worms in the bladder, 43 ; cases of, 43, 44 ; symptoms and treatment, 45.

#### Z.

Zucchias, his case of malformation of the penis, 199.

Zinc, salts of, their influence on reflex excitability, 151 ; chloride of, in the treatment of uterine excrescences, 265.

Zoosperms diminished by coitus, 59, 66.

## APPENDIX.

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Dr Black's Letter to "The Lancet," referred to in Preface, and editorial comments thereon—

### QUACK ADVERTISEMENTS.

TO THE EDITOR OF "THE LANCET."

SIR,—I have read with entire concurrence, as I am sure must have been very generally done, your remarks on the above subject in your impression of June 18th. I am persuaded that the extent to which functional diseases of the generative system worries young men is not fully appreciated by the profession; and if venereal diseases have been rescued from the quacks, I agree with you in seeing no reason why the same could not be accomplished in the case of spermatorrhœa, real or imaginary. You will correct me if I am wrong in assuming, that of the number of young men who address you regarding bodily disease, nine-tenths do so for spermatorrhœa. Nor can surprise be felt, while such lukewarmness exists among the profession with respect to this subject, while the most unscrupulous of the provincial papers open their columns to the filthy advertisements referred to by your correspondent, that so many young men get entangled in the skilfully wrought meshes of the charlatan. Either spermatorrhœa is or is not a disease. If a disease, it cannot be beyond the pale of legitimate practice any more than gonorrhœa or syphilis; if not, the delusion cannot be too soon exploded. While I believe that the importance of the subject has been much exaggerated, there is no doubt in my mind as to the injurious effects of an excessive seminal drain and its attendant complications. Believing, then,

that there is such a disease as spermatorrhœa, and one as amenable to treatment as, or perhaps more so than, functional disorders of other organs, I hold with you that the happiness of youth and the interests of society demand from the profession a less reserved acknowledgment of it. An incalculable amount of good might result, I think, if lecturers on medicine or surgery would devote but *one* lecture of their course to this subject—one on which the future practitioner is so certain to be consulted in the course of his practice. The same may be said of the occasional appearance of a judicious article on the subject in your journal. I have been a faithful reader of "The Lancet" for eight years at least, and during that time I have not seen a paper on this subject in its pages. Let it be openly avowed that no disease is beneath the solicitude of the legitimate practitioner—let us not fail "to satisfy the expectations of the public," and then quackery will inevitably die, and imposition become extinct. This subject is one of vital importance, and the suggestion of "A Countryman" is a good one. The influence of a respected medical man in a family circle is great, and it cannot be used to a better purpose than to the exclusion of newspapers which prostitute a powerful influence to co-operation with charlatanism. Provincial newspapers are clearly the greatest offenders against public morality in this respect. By excluding such advertisements, these and all other papers will deserve well of the public; and their influence, instead of being diminished, will be augmented in the eyes of all intelligent people.—Yours, &c.

D. C. B.

June, 1870.

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*From "The Lancet," June 16th, 1870.*

We last week published a letter signed with the initials "D. C. B." in which arguments were adduced to show the advantages which would result from careful study of the functional disorders of the male generative system. We need not say how entirely we agree with our correspondent, whose remarks, indeed, were in the main suggested by our own. It is quite true that a certain amount of quackery is altogether inde-

pendent of the profession, and that the demand for it, so to speak, arises solely from the inability of legitimate medicine to accomplish impossibilities, or to fulfil unreasonable desires. The *bon-vivant*, who wishes at once to indulge his propensities and to preserve his digestion, flies to a quack, because the physician truly tells him that the two aims are incompatible with each other. But such demands as these would never support quackery as a trade; and its success is due to the skill of its followers in finding out those dark corners of pathology which medicine and surgery have not sufficiently explored, and concerning which legitimate practitioners are prone to give widely different opinions and advice, or even to avoid giving any opinions at all. Of such corners there are few now remaining; and the domain of systematic quackery is almost narrowed to cases of real or fancied sexual incapacity.

It would, perhaps, be hardly just to say that such cases are not understood by the profession, because in most text-books on surgery there will be found some slight reference to them, in which sound principles are correctly stated. But it would be perfectly just to say that, even in books, such cases are slurred over with extreme brevity; that the details essential to successful medical treatment are seldom clearly laid down; that the patients receive, as a rule, very little sympathy or consideration; and that they are not assisted to overcome the difficulties that hinder them from seeking advice.

Now, we think this is a very unfortunate state of things. Partly from actual instinct, and partly from a custom that has prevailed long enough to become a secondary instinct, there is a repugnance, on the part of the young, to speak about sexual matters; and this repugnance places a formidable obstacle in the way of patients who have to seek advice from a man probably much older than themselves, possibly their superior in social station, and to whom they are personally known. The difficulty is increased if the patient feels that he will have to plead guilty to masturbation—a practice which he has learned to regard as at once a physical and a moral transgression, but which he is not on that account the more disposed to relinquish. And if, after over-

coming his unwillingness to speak, he finds himself curtly received, told that there is nothing the matter with him, and that all he has to do is to abandon self-abuse, the chances are very many that he will fall into the hands of the quack after all. The remedy for all this would be, that the profession should learn to treat functional sexual disorders, as they treat all others, simply and entirely as matters of business, without the smallest reference to any consideration but the cure of the patient. To this end, in such disorders, there are many important surgical and physiological details that require close investigation, and that differentiate the conditions which will come under the notice of the practitioner. Inquiry into those details will be the only safe guide to a rational therapeutics, and will at the same time win the confidence of the patient, and assure him that the nature of his malady is understood. In our existing surgical literature we know of no work in which these details are treated, by any sufficient authority, with adequate care and fulness, and without digression into questions which, however important, are wholly irrelevant in a medical point of view. We think that some of our great surgeons, already placed absolutely above the suspicion or the need of writing for practice, and able to raise to his own level any question that it pleased him to touch, might render a most important service to the community by publishing a book, or delivering a course of lectures, that should lift the mere surgery of spermatorrhœa and sexual debility out of the mire into which it has been cast by ignorance, by shamefacedness, and by greed. The subject might in this way be made to take its place in the ordinary domain of practice, and to be no more embarrassing to either doctor or patient than illness of any other kind. And we cannot help thinking that it would be a step towards this desirable consummation, if practitioners would make it a custom, when consulted by boys or young men, to ask one or two plain questions about the state of the sexual functions, just as, in the case of young women, they now invariably ask about the catamenia. If the latter had for generations been a tabooed subject, we should not be in possession of our present knowledge about the diseases peculiar to the weaker sex; but the fact that every doctor

assumes the propriety and necessity of inquiring about menstruation, places him at once in the position of a man whose aid and counsel are to be sought in the case of any menstrual derangement. He ought to occupy the same position with regard to real or presumed sexual weakness in the male, and there can be little doubt that, in many instances, the inquiries we have suggested would be quite as much *ad rem* as many of those that are more commonly put at the bedside. We conjecture a good deal, but we know with certainty very little, about either the actual prevalence or the direct effect of self-abuse; and everything that tended to clear up the obscurity in which this and kindred questions are involved, would be a source of great, and probably of unmixed advantage.

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*From a Leading Article in "The Lancet," July 10, 1857.*

In treating of quackery, "The Lancet" observes as follows:—"We only see one available remedy in the hands of the profession. A prudish reserve has, in a great measure, deterred men of character from undertaking a specialty connected with the depredations of adventurers. Whether such reserve has been beneficial to the public or to the profession, grave doubts may be entertained. We think a different course might have been a public service. Let honourable and scientific men take possession of the field now occupied by those vagabonds. It cannot matter to a high-minded surgeon what department of surgery he adopts. Sufferers must exist, and ought to have the advantage of consulting men who have a character to preserve. To relieve such sufferers is as high a vocation as any other connected with medicine or surgery. We cannot but admire that such a confusion between the *moral* and the *physical* should ever have swayed the profession, as that it is less reputable to conserve the genito-urinary organs than any other. Specialities are the natural offspring of advanced civilisation.

"All the stilted declamation that can be thundered against us to the contrary, will never persuade us that a subdivision of

labour is not adapted to modern requirements. Nor can we admit that any class of disease ought to be turned away from with affected disgust. The greatest minds rise superior to such pseudo-gentility. John Hunter and Parent Duchatelet did not see anything derogatory in cultivating the department of medicine to which we refer. And it would be well for us, and well for the public, if they had more numerous imitators."













